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Iron

# THE IRON AGE.

## VOL. XLVI.

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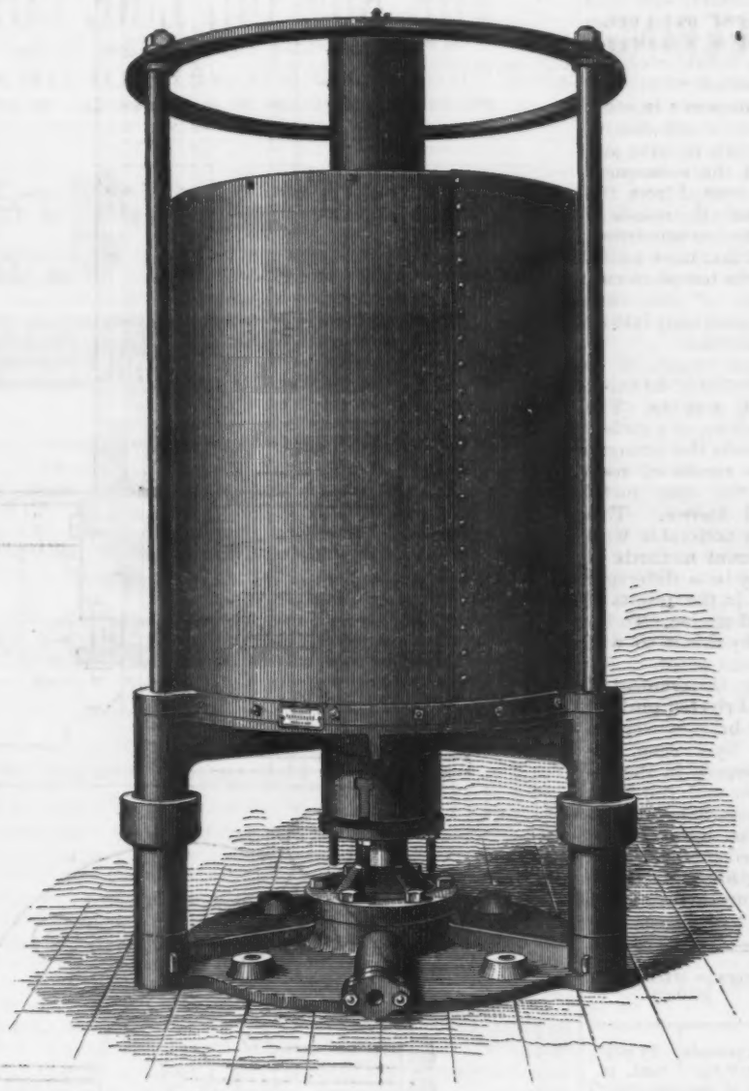
# THE IRON AGE

THURSDAY, JULY 3, 1890.

### Accumulator.

The annexed cuts represent quite fully an accumulator built by the Lloyd Booth Company, of Youngstown, Ohio, and now in successful operation in the tube department of Messrs. J. & C. Hodgson, of Montreal, Quebec, Canada. The accumulator represented differs in design from others in use, one of the principal features being that the cylinder, which is inverted, moves while the ram remains stationary; and, owing to the machine being constructed on this principle, all of it is above ground and the different parts are easily accessible for packing and drainage. The weight occupies the space between the cylinder and the wrought iron shell which surrounds it, so that the weight "hangs" on the column of water, and the tendency to tip is not so great as in accumulators of the old style. The water enters and discharges at the side of the base plate, passing up through the center of the ram into the cylinder, provisions being made to drain at the lower end of the cylinder. The principal points in the construction are plainly shown in the accompanying drawings.



ACCUMULATOR.

The Philadelphia Manual Training School had its annual exhibit last week, showing rapid progress by young artisans, and reflecting credit on Prof. Sayre and his corps of teachers. The exhibit comprised a model showing eight different methods of driving shafts by transmitting power by belts; a compact and ingenious horizontal engine, completely finished and worked by electricity. Out of five hours' work a day the pupils have one hour and forty minutes devoted to manual labor and three hours and twenty minutes to to other studies. In his three courses of manual training Professor Sayre teaches the boys to make all articles of use and ornament, from the abstract drawing to the concrete model, and to exercise their minds and imagination at the same time.

The old Ogden iron mines, near Ogdensburg, N. J., on the line of the Susquehanna and Western Railroad, are to be reopened early next month by the New Jersey and Pennsylvania Concentrating Company, of which Thomas A. Edison is president. It is the intention of the company to apply Edison's newly invented magnetic ore separating process to the concentration and reduction of the ores mined. Already extensive concentrating and reduction works are completed on the ground, and are equipped with machinery for handling 1000 tons of ore bearing rock per day.

### The North River Bridge.

Congress has passed the bill authorizing the construction of a bridge across the Hudson River between New York and Jersey City, and all it needs now is the President's signature to complete the power of the incorporators to proceed with the work. The plans are those of that eminent civil engineer and bridge architect, Gustave Lindenthal, of Pittsburgh. They provide for a structure over 7000 feet in length, 100 feet wide, and 140 feet in the clear above high water mark. There will be one central span 2850 feet long between the New York and New Jersey shores, and two other spans, each over 2500 feet, extending from the piers on shore to the immense anchorages on either side. The structure will be built upon plans like those of the Brooklyn Bridge, only twice as large in nearly every respect. The towers are to be built at the pier head line on either shore, and are to be 506 feet high, almost double the hight of those of the Brooklyn Bridge, which are 280 feet. The cables, of which there will be four, two on either side, will be 4 feet in diameter, and will contain 15,000 steel wires each. The Brooklyn Bridge cables are 15 inches in diameter. Unlike the Brooklyn Bridge cables, the cables of the North River Bridge will not extend inland to anchorages at a distance from the piers, but will be brought to anchorages at the base of the piers. These anchorages will be immense affairs of solid masonry 210 feet high, 180 feet wide and 400 feet long, with tunnels through the top for trains to pass through. The roadbed will be 85 feet wide, with provision for eight railroad tracks.

The bill provides that work on the structure must begin within three years, and that the bridge must be completed in ten years. Engineer Lindenthal says it will be necessary for the bridge company to acquire $30,000,000 worth of real estate, principally in New York City, for terminal facilities before work on the bridge proper can begin, and that the bridge itself will cost $16,000,000. Before the Senate Commerce Committee Mr. Lindenthal said, in answer to questions that the central span would rise and fall 8 feet in changes of temperature to the extremes. The anchorages would be half as large as the Capitol at Washington, and each would contain 50 per cent. more masonry than the largest of the pyramids of Egypt. Before it all other bridge structures in the world would seem insignificant. The plan has been before the engineering and financial world for years, and has been pronounced feasible and practicable by the American Society of Civil Engineers. The parties who are back of the scheme are not speculators, but are men whose works and achievements in the constructive and financial fields are matters of wide and creditable renown. The incorporators are Jordan L. Mott, John King, M. C. Lanahan, James Andrews, Thomas F. Ryan, Garret A. Hobart, F. W. Roebling, Charles J. Canda, Edward F. C. Young, Henry Flad, Gustav Lindenthal, A. G. Dickinson, J. H. Miller, W. K. Brookfield, Samuel Rea, W. F. Shunk and Philip E. Chapin. Judge Greene's rival scheme is temporarily thrown into the background, but the latter has received a charter both from New Jersey and New York.

# The Flow of Metals and its Relation to Testing.

BY PAUL KREUZPOINTNER, ALTOONA, PA.

In *The Iron Age*, June 5, page 948, attention was called to the flow of metals as an important property, and its effect on the quality of structural material. Since its influence is so potent on the life and safety of a structure it must manifest itself in a small test piece, when this is subject to stresses, as well as on a whole structure. This is indeed the case and is the reason why materials are tested according to prevailing methods. But testing will be worse than useless, and the time and money expended in this work be thrown away, unless we are reasonably sure that the behavior of the piece of metal under strain in the testing machine is analogous and comparable with the behavior of the same metal in the structure when that structure is subjected to stresses; in other words, whether we can draw safe conclusions from the results of tests to serve as a basis for designing, and the subsequent stability of the structure erected from the material tested. It is chiefly the results of tensile tests with which we are concerned, since it is by this method that most metals are tested. The form of the test piece may and does alter the results of tests, thus introducing elements of uncertainty into an otherwise most valuable method.

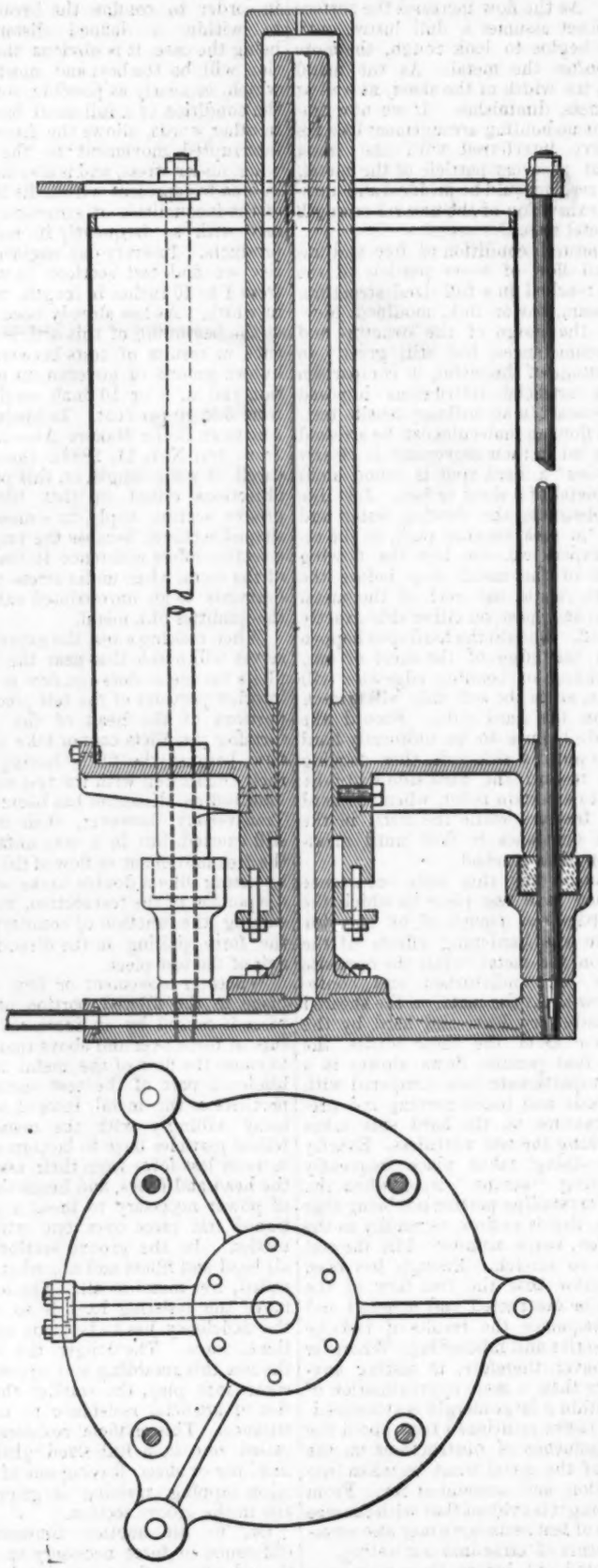
We must find to what extent, if at all, such elements of uncertainty do exist, and how to avoid them, if possible. The fact that a full sized structure, or a girder, beam or bar does not possess the strength per square inch which the results of tests with a small piece of the same metal would indicate, is well known. This difference in strength is noticeable with all the results of the different methods of testing. Again there may be a difference of from 3 to 10 per cent. in the results of tests according to shape of section. To inquire into the reasons why this is so will be the subject of the present paper.

Tests were made by the Government of Holland with 32 full sized riveted girders, which were intended for bridges over the Rhine, at Arnheim and Nymwegen. In the table below, the difference in the results of small test pieces and full sized girders are given.* It is perhaps not too much to say that similar instances are known to every experienced engineer. The breaking loads of the girders given are those loads at which fracture or permanent deformation of the girder took place.

| Material. | Tensile strength, pounds per sq. in. of test pieces. | Average strength of girders. | |
|---|---|---|---|
| | | In pounds per sq. in. of section. | In per cent. of theoretic'l strength. |
| Crucible steel. | 119,400 | 88,400 | 74 |
| Crucible steel. | 93,800 | 55,500 | 59 |
| Mild steel..... | 65,400 | 50,600 | 77 |
| Wrought iron. | 55,400 | 52,000 | 94 |

Objection may be raised to the introduction of the results of the above experiment as not germane to the subject under discussion, because a girder is a jointed structure into the strength of which design and workmanship enter as important factors. While such an objection holds good, to a certain extent, the weakening effects of these causes must nevertheless be considered only in the light of what might be called incidents contributary to the indisputable fact that the whole is weaker than its part, if such an expression is accepted as conveying the meaning. Even in a plain bar of 1¼ or 2 inch round iron, the difference between the full sized bar and a corresponding test piece, with a 6 or 8 inch section, is often 5 per cent., and with a groove section, 15 per cent.

Let us now examine in how far the flow of metals contributes to this difference of results in strength due to form and size of section. Let us assume a large steel or iron plate polished on one side and the whole surface covered with intersecting squares or circles. If we now fasten the plate on each end in suitable grips and apply sufficient force to stretch the plate beyond the elastic limit—that is, beyond that point where the molecules, when drawn out of their natural position by external force, do not return again to that position, then we will see how the squares or circles begin to elongate all over the plate. The more uniform the structure of the material the



VERTICAL SECTION AND PLAN OF ACCUMULATOR.

* *Wochenschrift des Vereins Deutscher Ingenieure.* 1882. No. 1.

more uniform the extension of the inscribed figures will be. The flow of the metal, which is thus indicated by the extension of the figures, and which had, though imperceptibly, begun with the application of the smallest load, becomes more rapid as the force applied is increased. As the flow increases the surface of the sheet assumes a dull lustre, until finally it begins to look rough, the more so the softer the metal. As the metal stretches the width of the sheet, as well as its thickness, diminishes. If we now imagine that no holding arrangement like the grips have interferred with the freest movement of every particle of the metal, then the result would be an ideal and unrestrained exhibition of the natural strength of the metal tested.

This natural condition of free and unobstructed flow of every particle of the metal is reached in a full sized structure, girder, beam, bar or link, modified, however, by the design of the structure and other circumstances, but still greatly to the advantage of the metal, in comparison with the artificial restrictions imposed upon the metal in an ordinary tensile test. That the flowing molecules can be arrested and impeded in their movement is clearly shown when a hard spot is found amid the soft metal of a sheet or bar. Just like a rock obstructs the flowing water and forces it to seek another path, so the attentive expert can see how the flowing molecules of the metal stop before the hard spot, while the rest of the metal flows on and past on either side exactly like a fluid. Should the hard spot happen to be at the edge of the sheet or bar, then buckling or bending edgewise will take place, since the soft side will stretch more than the hard side. Should the whole side happen to be uniformly hard and the opposite side soft, then curving sideways toward the hard side will take place up to a certain point, when the hard side will fracture while the metal in the soft side continues to flow until maximum strength is reached.

In a small way this same occurrence takes place in a test piece in which the sheared edge was planed off on one side to remove the hardening effects of the shearing on the metal, while the opposite edge was left undisturbed and consequently hard. As the metal on the sheared edge is made very dense and hard by the compression from the shear blades, the metal in that portion flows slower in a very disproportionate rate compared with the soft side and hence curving and premature fracture on the hard side takes place, making the test worthless. Exactly the same thing takes place frequently when testing "scrapy" iron, when the hard and crystalline portion not being able to stretch, that is to flow, as readily as the soft portion, snaps asunder while the rest continues to stretch. Enough has been said to show that the free flow of the metal can be obstructed and arrested and as a consequence the results of tests be made defective and misleading. Wherever and whenever, therefore, in testing anything more than a mere approximation of quality within a large margin is attempted, then the above mentioned facts about the possible influence of obstructions on the free flow of the metal must be taken into consideration and accounted for. From the foregoing it is evident that with the size and shape of test section we may also introduce elements of error into our testing.

As pointed out before, there may be a difference of from 8 to 10 per cent., and even more, in the results of tests of the same metal, due principally to the difference in test section. With a straight section (that is, with a test piece whose edges are planed and where there is consequently nothing to hinder the test piece breaking anywhere between the ends) that portion of the metal which is inside the grips is hindered from flowing. A test piece with straight edges would therefore be the most preferable, if it were not for the fact that it is liable to break in or near the grips, due to the injury done by the latter, where little or no elongation takes place. A shaped section is almost universally used in order to confine the breaking point to within a defined distance. This being the case, it is obvious that that section will be the best and most preferable which, as nearly as possible, comes within the condition of a full sized bar or sheet; in other words, allows the freest and least interrupted movement to the molecules when under stress, and is also large enough in area to represent within its limits some of the inequalities of structure which are met with so frequently in metallurgical products. In every day engineering practice we find test sections in use ranging from 1 to 10 inches in length, varying also in width. As has already been mentioned at the beginning of this artfcle the difference in results of tests between the well known groove or government marine section and an 8 or 10 inch section may be from 3 to 10 per cent. In his letter to the American Boiler Makers Association (*The Iron Age*, Nov. 11, 1889), the writer has dwelt at some length on this point. The objections raised in that letter to the groove section apply in a measure to all shaped sections, because the very shape of a section offers resistance to that free flow of the metal when under stress which is so desirable to an unrestricted exhibition of the qualities of a metal.

When making a test the experienced observer will notice that near the heads and fillets the metal does not flow so readily as in other portions of the test piece. Those portions of the head of the test piece forming the fillets cannot take part in the flow, because the fibers having been cut, their connection with the test section in a longitudinal direction has been destroyed. Transversely, however, their influence is still exerted, but in a way unfavorable to the free movement or flow of the molecules by acting like a double brake on the middle portion of the test section, virtually assuming the function of counterweights to the force pulling in the direction of the axis of the test piece.

Whatever movement or flow does take place in the filleted portion of the test piece is caused by an increased expenditure of force over and above that necessary to cause the flow of the metal in the unhindered part of the test section. The particles of the metal, instead of moving away willingly with the mass of their fellow particles have to be torn away with more or less force from their associates in the head and fillets, and hence the increase of power necessary to break a small sectioned test piece over one with a large section. In the groove section we have all head and fillets and no, what might be called, free metal at all. The leverage to move the resisting load is so short that the deficiency has to be made up by additional force. The longer the test piece the less this retarding and opposing force comes into play, the smaller the proportion of artificial resistance to natural resistance. This artificial resistance may be called zero in a full sized girder beam, link, bar or sheet, leaving out of consideration lapping, riveting or gripping, and 100 in the groove section.

Or, to use another illustration, the difference in force necessary to overcome the cohesion of the molecules in the two mentioned extreme cases, may be likened to two spiral springs, the one short, of heavy wire and high temper, the other long, thin and comparatively soft. There is no question which of the two springs can be extended with the least expenditure of power.

There is no more striking proof of the influence of size of test section—namely, the amount of metal to flow without restraint on the results of test, than the results of a series of tests made at Watertown Arsenal on iron and steel boiler plates.* The series consisted of 96 test pieces, 48 of which were iron and 48 steel sheets ¼-inch thick. Each series of 48 was divided into four sets. For each one set of iron and steel test pieces the section was the same. All were groove sectioned, that is two holes were drilled and the metal on each side of the section slotted out to equal width with diameter of hole.

Length of section for the eight sets was ¼, ½, ¾ and 1 inch respectively. The width of section was ½, 1, 1½, 2, 2½ and 3 inches for each set. In this varying width of section we find a confirmation of all that has been said thus far in regard to the relation of the flow of metals to testing.

The results of these tests show an almost uniform decrease of strength with the increase of width of section. Summarizing the results of the ½ inch and 3 inch sections we find an average of 9450 pounds greater strength in the ½ inch over the 3-inch section for the iron and an average of 5300 pounds for the steel test pieces of the same dimensions. This is equal to 17 and 8 per cent. respectively of an increase in strength due entirely to such a form of section which most effectually prevents the metal from flowing freely and properly. This conclusion is still more forcibly proven by the statement in the report of the steel plate tests: "Specimen ½ inch wide at bottom of groove, break square across, leaving the fractured ends straight."

Properly interpreted in the light of the arguments advanced herein, this means that no flow at all has taken place in this class of sections. Consequently, the 9450, or the 5300 pounds more required to break the ½-inch wide sectioned test pieces, clearly represent the excess of force necessary to overcome the cohesion of the molecules unassisted by a previous flow and a weakening of the metal due to that flow. As explained before, the molecules or particles of the metal have to be forcibly torn out of their positions, instead of they leaving these positions voluntarily on the application of a load somewhat higher than the elastic limit.

It may be said here in passing that for these reasons, also, the results of taking the elastic limit on a section shorter than 8 or 10 inches are entirely worthless, unreliable and misleading. If the thickness of the above test pieces would have been ½ inch instead of ¼ inch, the difference between the ½-inch and 3-inch wide sections would have been found to be higher still, because of the greater sectional area to be torn apart. In the foregoing, only the relation of the flow of metals to testing their strength has been considered to a neccessarily limited extent, without any reference at all to elongation, contraction, fatigue, detail fractures and other relative subjects.

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The French Government is about to sell out the nation's interest in the celebrated Sevres porcelain factory, which has had a yearly subvention from the State since Louis XV took possession of it 130 years ago. Instead of spending $150,000 a year for this manufactory, the Government proposes to establish a national school of ceramics, at about half that cost. The English syndicate formed to acquire the works, stock in trade and trade-mark intend to restore its former celebrity.

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The Panama Canal scheme has hopelessly collapsed after sinking $225,000,000, but Lesseps' ditch offers an inviting field for enterprising junkmen and dealers in second-hand machinery.

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* *Congressional Record*, Forty-seventh Congress, Second Session, Ex. Doc. 1. Report of Ordnance Office, 1882.

## Controlling Apparatus for Bessemer Converters.

At the March meeting of the South Wales Institute of Engineers Nicholas Watts presented the following paper on "Apparatus for Automatically Controlling Bessemer Steel Converters and Center Cranes:"

The value of any apparatus or appliance designed to afford immunity from danger to life and limb, and to obviate loss of property, does not require dilating upon. The high importance of the application of such a safeguard to Bessemer converters and center cranes will be appreciated by steel makers.

At the autumn meeting of 1883, of the Iron and Steel Institute, Mr. E. P. Martin remarked that one of the worst accidents in steel works resulted from the fracture of hydraulic pipes, and he considered it very desirable to guard against the effect of such failures as far as possible. In the United States he had seen an arrangement to prevent a center crane from being tipped by striking the ingot molds; in the event of its running down, the crane was stopped so that it just cleared the mold. The author therefore proposes to devote no more space to the introduction of the subject, but to proceed at once to describe the apparatus under notice, which is equally adapted for application to converters where the main hydraulic cylinder is movable as in cases where it is stationary. The apparatus is also adapted to control the movements of center cranes with single or double rams. On page 5 we show two longitudinal sections of the hydraulic controlling apparatus, the upper section illustrating its application to a converter, the main hydraulic cylinder C of which is stationary. Governing the communication between each port of the main hydraulic cylinder C and the pressure supply pipe, is a valve, *a*, seated at one end of a small cylinder, *b*, in which is a plunger directly connected to a small ram *c*. The valves *a* open upward. The plungers of the cylinder *b* and of the ram *c* are all connected to counterweighted pawls, *d*, carried on a shaft conveniently placed in relation to the pinions of the converter A. Above each valve, *a*, is a similar valve, *a'*, also opening upward, and governing the communication between the cylinders *b* and the return channel. Water entering either of the cylinders *b*, according to the direction in which it is desired to move the converter, first raises the lowermost of the valves, and, passing beyond it, forces back the plunger beyond a port, *p*, which communicates with the corresponding port of the main hydraulic cylinder. At the same time the water acts on the upper face—larger area—of the uppermost valve and keeps it closed.

The plungers being connected, the port communicating with the opposite end of the tilting cylinder is simultaneously opened for the escape of the water at that end. The pawls normally tend, under the influence of their counterweights, to gear with the pinion of the converter, and are sufficient, without the assistance of the hydraulic pressure, to hold the converter in any position. These pawls are directly connected to the plungers of the cylinders *b*, and in virtue of this arrangement the pawls are thrown out of gear with the converter pinion as the plungers are forced back by the water. The vessel is then free for tilting, and may be moved in either direction as required, so long as the proper pressure of water is maintained.

If now the water pressure fail, from accident or default on the part of the operator, the counterweights, being no longer counteracted, return the pawls into gear. At the same time the returning plungers in the cylinders *b* close the ports in them, and prevent escape of the water from both ends of the tilting cylinder, so that the converter cannot move, it being locked both by the water pressure and independently by the pawls. An important feature in this invention is the ram *c*, which is shown between the two plungers. This ram is independently connected to the main pressure pipe, the communication being governed by a valve at the pulpit. The plunger of the ram is of larger area than either of the plungers in the cylinders *b*. When the vessel is lowered to a horizontal position for the purpose of charging, or for the purpose of adding at any time heavy scraps to the charge for cooling the same, the ram is then brought into use for locking the vessel in the horizontal position, so as to sustain with safety the additional strain; this is effected by establishing communication through the independent pressure pipe *e*, between the ram and the main.

It will be seen that, under this arrangement, not only is danger of overbalancing thus obviated and injurious shocks to the machinery prevented, but the vessel is held without the necessity of exerting a varying pressure from the pulpit. Again, when repairs are required, as sometimes happens while the vessel is charged, the ram is brought into use to hold it. The converter, when thus locked, can only be released by expelling the water from behing the ram. Simultaneously with closing the valve through which the water is admitted to the ram, the escape valve for the return water is opened. Water pressure is then admitted to either of the small cylinders, and there being no resistance to be overcome other than that offered through the counterweighted pawls *d*, the vessel becomes unlocked. A further feature of great importance in this invention consists in the employment of means for obtaining increased steadiness in tilting the vessel. Each valve, *a'*, by which the return water escapes from each cylinder, *b*, is acted upon by a counterweight, *f*, carried in connection with a system of levers pivoted at a convenient point and connected independently to the converter pinion. The arrangement is such that as the converter is lowered below the horizontal position, one of the weights is depressed and keeps the escape valve of its cylinder closed, and thus the vessel is automatically balanced during the pouring of the metal. When the vessel has been discharged, the weight ceases to act upon the valve, and the converter is lowered for cleansing. The vessel is restored to the horizontal position in the usual way, but between that position and the vertical position it is controlled by the other counterweight in a manner similar to that described with reference to the first counterweight. The result is, that the operations of lowering and raising are greatly steadied, and waste of metal in pouring and jarring of the machinery are lessened. Moreover, the weights and their connections constitute a means for locking the water at any stage in the operation of lowering or raising the vessel, which will be thereby rendered absolutely stationary in any position. The lower section illustrates the application of the apparatus to a movable tilting cylinder. There is no difference, except in a few details, between this arrangement and that shown in the upper section.

The apparatus has been applied to a converter at Blaenavon Steel Works, where it has been in use with complete success since September last, and a second converter has been recently fitted with the safety apparatus, and is now in full work. At Ebbw Vale a converter was fitted in January last, and has worked uninterruptedly since then; the converter and its charge is readily held stationary, during the operation of pouring, by the intermediate ram acting against it and the water behind it. The engraving illustrates the application of the apparatus to a single ram center crane. The water admitted to raise the girder carrying the ladle passes through the lower valve *a* to the underside of the ram and raises the girder to the required hight. The valve at the pulpit may then be left. The escape valve *a* at the crane is kept closed by a counterweight, *f*. In the event of failure of pressure, the water is imprisoned between the two valves and the girder is maintained stationary. The action is instantaneous, which, seeing that the girder is usually about 6 inches only above the molds, is of the highest importance. The girder is kept perfectly steady, notwithstanding any leakage through the valve at the pulpit.

In order to lower the crane—to meet various hights of molds—the operator at the pulpit placing his foot on a lever opens a stop valve situated in an independent pressure pipe communicating with the main and with a small ram, *c*, at the crane. The resistance of the counterweight *f* is overcome, and the escape valve *a'* rises and allows the water to pass out, and when the crane has been lowered to the desired extent the stop valve is closed to prevent further descent of the girder. The control over a center crane or a converter afforded by this apparatus is absolute, while it occupies but a small space and involves no alteration in existing plant. The apparatus is simple, compact and inexpensive, and by its use many lives and many tons of metal would annually be placed beyond risk of loss.

The following extract is from the report of the Chief Inspector of Factories and Works to the Home Secretary for the year ending October 31, 1888: "Before leaving this subject of safeguards, I would call special attention to the completion of a patent appliance which has for its object the preventing of accidents in Bessemer steel works, due to the jerking and sometimes tilting over of the converter when containing its full charge of molten metal. In the success of this appliance I have taken much interest; and in H. M. Chief Inspector's report for last year, H. M. Superintending Inspector, Mr. Whymper, made special reference to the same, and to the risks to life and limb which which it was calculated to avert. I am now in a position to report that such a safeguard has been completed, and fitted to one of the converters at the works of the Blaenavon Company, Monmouthshire, and that it has fully realized the most sanguine expectations of the patentees, Messrs. Phillips and Evans, of Newport, Mon., and all parties concerned in its success. It has been subjected to the most severe tests at the Blaenavon Works, and has stood the ordeal to the entire satisfaction of the management and the joy of the workpeople, and it can now be safely asserted that with this appliance fitted to the converter the Bessmer process of steel ingot making may be carried on with comparative freedom from risk to the men and from loss to the occupiers."

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The official report of the Secretary of State of the Republic of Mexico for the fiscal year just ended contains some compilations interesting to people of the United States. The total exports from Mexico were valued at over $60,000,000. Of this amount more than $40,000,000 went to the United States, $13,000,000 to England, $3,000,000 to Germany and $3,000,000 to France. Of the 35 custom houses El Paso stands first, Vera Cruz second, Progreso third and Loredo fourth. El Paso did 25 per cent. of the entire business.

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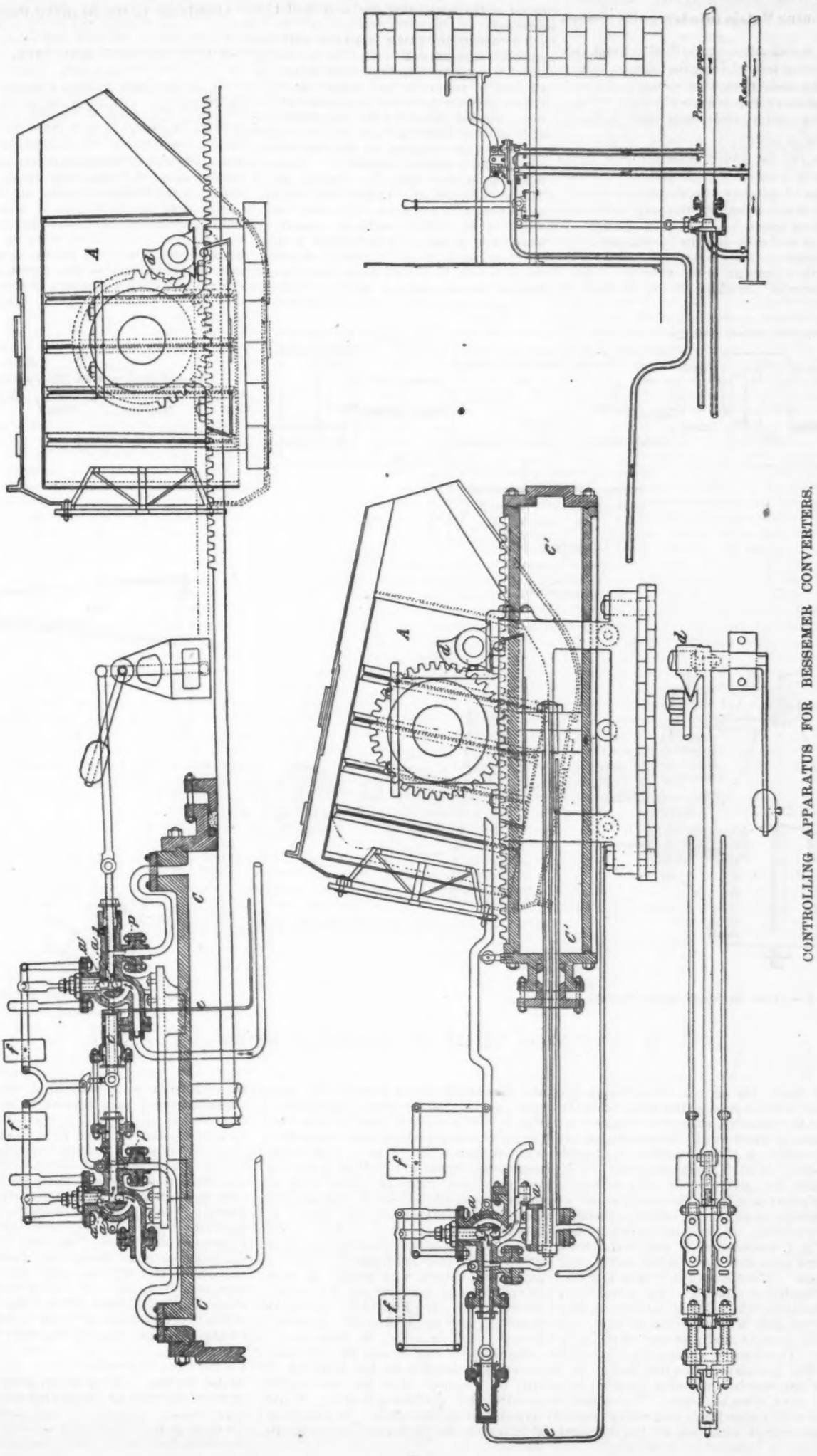
Some of the old ferryboats for the North River side are being rebuilt with double decks, adapted to the elevated railway system.




CONTROLLING APPARATUS FOR BESSEMER CONVERTERS.

## Spinning Metals into Irregular Shapes.

It is difficult to conceive of the vast variety of so-termed irregular shapes which can be made upon what we might call modifications of the ordinary lathe. By providing certain adjustments, and usually one or more additional motions, almost any form can be readily turned and a given pattern exactly reproduced. Heretofore irregular spiral or rope shapes have usually been made, either by stamping two halves of sheet metal and then placing them together and soldering, or by placing a tube of metal upon a properly shaped mandrel and then pressing in the metal to make it conform to the shape of the mandrel by travel of the wheel over the length of the mandrel.

The operation of the machine will be readily understood. The tube being slipped on the mandrel, the latter is allowed to rotate at any speed desired. Before starting the wheel to spinning the tube into the shape of the mandrel one end of the tube is pressed into the grooves on the mandrel, so that the wheel may obtain a hold to impart to it the impulse to rotate upon its vertical axis. The oblique grooves in the mandrel act as a worm with respect to the wheel and cause it to rotate without regard to whether it is moved longitudinally over the mandrel or not. While so rotating the slide rest is moved longitudinally or parallel to the surface of the mandrel,

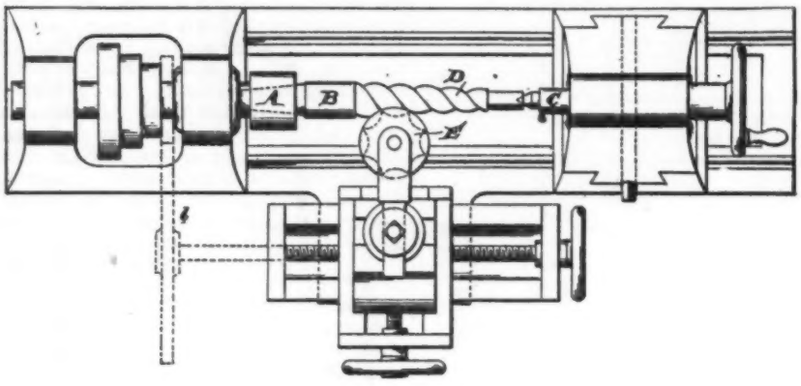



*Fig. 1.—Plan.*

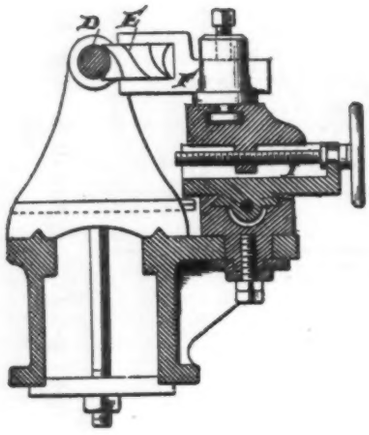



*Fig. 2.—Cross Section through Holder.*

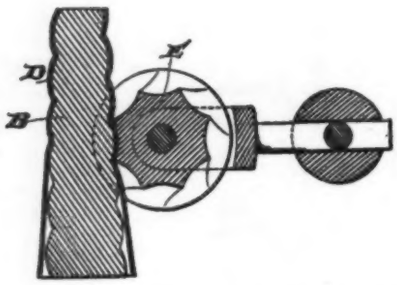



*Fig. 3.—Sectional Plan of Wheel and Mandrel.*

## Aluminum in the Drawing-Press. *

BY OBERLIN SMITH, BRIDGETON, N. J.

The experiments described in this paper have been very incomplete and only preliminary to those I hope to make in future. Having had a good deal of experience in cutting, forming and drawing sheet metals, and feeling a great interest in the commercially new and wonderful metal, aluminum, I applied to my friend, A. E. Hunt, for some specimens in sheet form, that I might from time to time test its working properties in presses with which we happened to be experimenting at the works of the Ferracute Machine Company. The chances

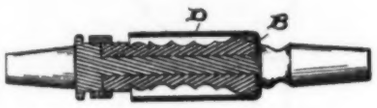



*Fig. 4.—Handle.*

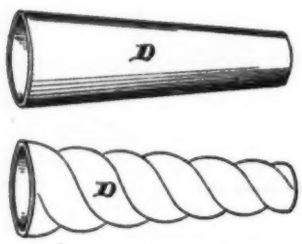



*Fig. 5.—Blank and Finished Spiral.*

*Fig. 6.—The Spinning Wheel.*

### SPINNING METALS INTO IRREGULAR SHAPES.

hand tool. On account of the joints the former method is objectionable, while the latter is expensive, slow and requires the exercise of great skill. The machine we here show is the invention of Joseph Browning, of 2139 North 29th street, Philadelphia, Pa., and has been used with most satisfactory results in the manufacture of silverware by one of the largest concerns in Philadelphia. In the lathe shown in plan, in Fig. 1, is a mandrel, B, held in the chuck A, and upon this mandrel the metal tube is spun. The metal tube D is in this case represented as tapering. The periphery of the spinning wheel E, Fig. 6, is formed with grooves, and is mounted on an axle preferably at right angles to that of the mandrel. This wheel is journaled in the holder F, Fig. 2, clamped in a tool holder of a slide rest which is movable parallel with and away from the work. The wheel is allowed to rotate freely and runs at a speed commensurate with that of the mandrel, and this is irrespective of the longitudinal and thus breaks down or spins the metal tube in the desired shape, as shown in Fig. 5. It is evident that the wheel acts simply as a worm wheel and rotates freely without necessitating any longitudinal movement, except in so far as is required to insure the ultimate travel over the entire length of the tube on the mandrel. During such travel of the wheel the mandrel may make 100 or 1000 revolutions. It is apparent that the axis of the wheel may be changed from the vertical to any angle which will enable it to be driven by the mandrel as if it were a worm wheel. In Fig. 4 is shown the mandrel, cup and center for spinning a handle. The mandrel in this case is collapsible, so that it can be withdrawn after the completion of the spinning. It will be observed that by altering the mandrel and producing a wheel to correspond, irregular shapes of almost any description can be readily made on this machine.

for such trials being accidental only, and the time having been limited to the last few weeks, no crucial experiments have been tried, and no exact data have been obtained for a rigid comparison with other metals. The results of what little we have done, however, are shown in the articles exhibited in connection with the reading of this paper, which comprise various cups, plates, boxes, bells and cartridge cups and shells. For the latter I am indebted to my friend, Mr. Hobbs, of the Union Metallic Cartridge Company, who, at my request, ran several pieces of sheet aluminum through the dies with which he was making brass cartridges. The specimens are rougher than they would be had the metal not been a little too thin for the particular dies which he happened to be running. They show, however, a wonderful, and to me a somewhat unexpect-

* Read at the Washington meeting of the American Institute of Mining Engineers.

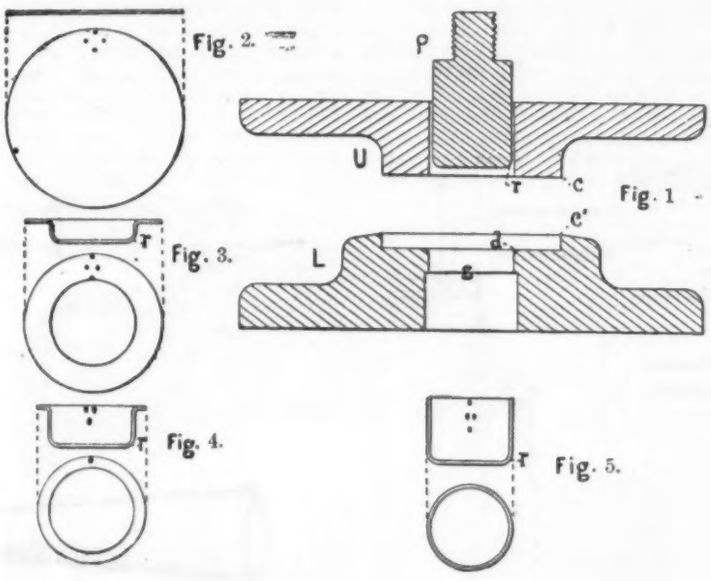
ed, adaptability to this kind of work. Mr. Hobbs writes me as follows:

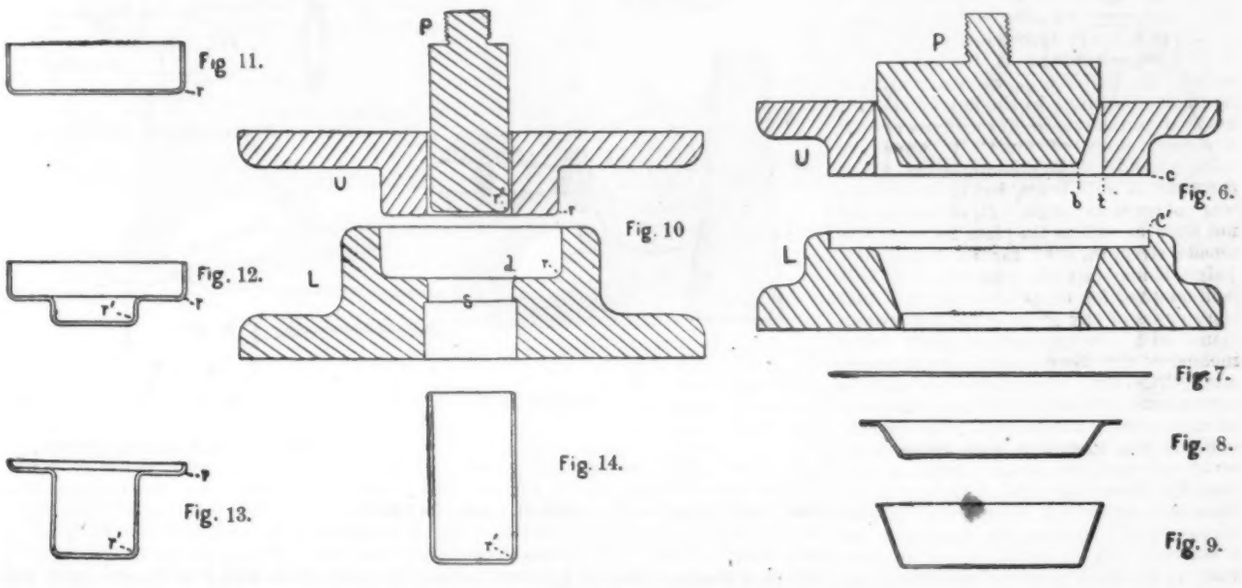
"The metal does not appear to stand nearly as much strain in bending as brass or 'gilding,' but in drawing will apparently stand much more than either, without annealing. The longest tubes sent you were brought to the present condition in three drawings without any annealing, the metal being .026 inch thick."

We thus see that a very valuable property of aluminum in this kind of work consists in its not needing the frequent annealings which are required by the brass in common use, and also by iron and steel, when drawn into deep articles. The failure in bending referred to is perhaps rather a failure to stretch, as shown by one of the samples, where the metal has been torn partly through, in attempting to draw a deep "pocket" or depression in the flat surface. This is probably accounted for by the known tendency of the metal to elongate under tension locally, rather than over a considerable space. The stretching of a pocket of this kind does not, however, come under the "drawing process" proper, which consists, not in stretching the metal, but in causing it to flow together, or "upset," in a circumferential direction, while at the same time it is flowing further apart, or stretching, in a radial direction. Thus treated, its thickness remains the same, except in some cases, where it is subjected to a combined operation—"broaching" and "drawing"—as happens in some of the operations of cartridge making, &c. This broaching consists in squeezing the metal thinner, by having the space between punch and die less than its original thickness

As what is known as the drawing process may not be familiar to all, I will briefly describe it, in its simplest form, as used for drawing a flat disk of sheet metal into a cylindrical or cup like shape. The operation consists in holding this disk so tightly between the two parallel, flat annular surfaces of the dies that it cannot wrinkle, while the punch which gives it its interior form is pushed down, through a hole in the upper die into a recess in the lower die, which fits it with the proper allowance to give space for the metal between. A set of these dies is shown in Fig. 1, in vertical section through their axis. In Fig. 2 is shown an axial section and a top view of the disk of metal, technically known as a "blank," before it is drawn. In Fig. 3 are shown the same views, respectively, at a later stage of the operation, when it has been drawn to about one-third of its final depth. In Fig. 4 it is shown at, say, two-thirds depth, and in Fig. 5 as completed. Four small dots will be noticed in Fig. 1, marked upon the blank, and forming the corners of a square, with its diagonal placed in a radial line. In the subsequent figures it will be noticed that two of these dots, upon either side of this imaginary radius, have gradually approached each other, while the other two dots, lying in the radial line, have receded, thus beautifully illustrating the respective directions in which the molecules of the metal have traveled in reaching their new locations. In Figs. 6, 7, 8 and 9 are shown a set of dies, and the work in its several stages of a form conical rather than cylindrical.

The dies, as shown in Figs. 1 and 6, are made so that they cut the disk from a large sheet of metal at the cutting edges $c$ and $c'$, as the upper die U descends to perform its mission of holding the blank from wrinkling between its lower flat surface, and the corresponding flat surface of the lower die L. When U has descended until it is firmly in contact with the blank, it stops and remains rigidly in position until the punch P has descended and drawn the metal from between the two holding surfaces, over the rounded corner, $d$, and down below $s$, into its desired shape. The lower edge of the working part of the die $s$ is called the "stripping edge," and is kept quite sharp, so that the metal will not be pulled up again by the friction of the punch. Although it has just passed through the die, its elasticity expands it very slightly, so that this stripping edge is usually found sufficient to keep it down. That a blank not confined by a holding surface will wrinkle is a fact easily proved by experiment.




ALUMINUM IN THE DRAWING-PRESS.

In practice it is found necessary to pu an ample vent hole for air through the punch, or else the cup is pulled up afterward by suction, in spite of the stripping edge. In one of the sample cups shown the vent hole was insufficiently large for aluminum, although it had worked all right with tin plate. This difference was owing to the stiffness of the latter material. The aluminum, being softer, was pulled up by the air suction just before the punch left the cup. This, of course, would not have happened had the press been running at a slower speed. The dies shown will do equally well for blanks, which have been previously cut elsewhere. In some cases, instead of the cutting edges $c$ $c$ a mere rim, with a rounded corner, projects above the surface, serving as a

gauge to locate the blank centrally when it is thrown in.

In Fig. 10 is shown a pair of "deepening dies," so called, which take a cup, Fig. 11, that has already been drawn in dies, like Fig. 1, to as great a depth as the metal will stand, and deepen it to the form shown in Fig. 14. The successive intermediate stages of the operation are shown in Figs. 12 and 13. These and subsequent similar processes are the ones used in cartridge drawing, except that the metal is usually somewhat thicker than the space between the punch and die, so that it is also subjected to a stretching process similar to wire drawing. This reducing in thickness is often called "broaching," but there is considerable confusion of terms used by various manufacturers.

The presses used for all the dies just described are, of course, of special construction, being made with an "inner" and an "outer" ram. The latter carries the upper die and is arranged to stop for a time, after a part of the stroke has been made, while the inner ram, carrying the punch, descends to the bottom of its stroke and rapidly returns, just as does the ram in an ordinary single action press. A fuller account of this interesting process, together with rules for the construction of the tools used and a description of the products obtained, may be found in a lecture which I had the honor to deliver before the Franklin Institute, and which was published in its *Journal* for November, 1886. In general, I can say, with regard to the drawing of aluminum, that, as far as my experiments have gone, it seems to be excellently adapted to be drawn into a great variety of household utensils, parts of scientific instruments, ornamental hardware, cartridge shells and for very many other purposes, some of which we, probably, can scarcely conceive of as yet. One of its great advantages is, as before intimated, its capacity of working without frequent annealing. In the imperfect trials made at our works, in dies which were not especially prepared for it, it seemed to work (outside of the non-annealing) about the same as soft brass, but in some cases was not quite as tough. It, of course, did not show as well as tin plate in regard to tensile strength. As far as I can now judge, it may be said, generally, that it is well adapted for deep drawing, and that the success of any given shape and proportions will, in comparing with other metals, be directly proportionate to tensile strengths. This view, however, may be somewhat modified in future, as the result of more careful and accurate experiments.

Since the foregoing paragraphs were written, I have seen some "drawn work" that Mr. Hunt had made, which is larger than any for which I happened to have dies on hand. Among his specimens are a saucepan and tea kettle, which corroborate my impressions as to the perfect adaptability of aluminum to the making of deep, seamless utensils—which will open to the housekeeper a new era of healthfulness and cleanliness in the kitchen.

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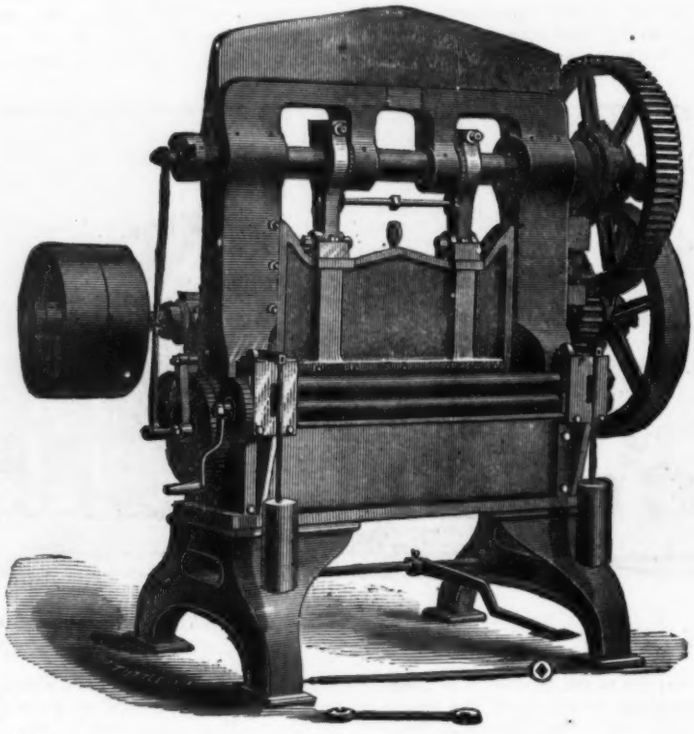
Interest has been revived in the case of Coxe Bros. & Co., the prominent independent coal operators of Pennsylvania, against the Lehigh Valley Railroad Company, which has been before the Interstate Commerce Commission for a year, involving the question of discrimination in coal tolls, by the complaint of John C. Haddock, an individual coal operator, to the Commission. Mr. Haddock alleges the same evils complained of in the earlier case. He declares that the Delaware, Lackawanna & Western discriminates against him by charging $1.80 per ton for transportation, while it hauls its own coal for $1.50 per ton. As bearing on the foregoing the statement is significant, apparently on authority, that the Lackawanna has refunded to shippers all amounts collected over the 50 per cent. rate since the passage of the Interstate act. The rebate in the case of one shipper amounted to more than $45,000.

## Sheet Metal Punching Press.

The cut herewith presented shows an improved roll-feed perforating press which, in connection with the one shown in our issue of June 12, represents the two leading machines for this purpose. Probably two-thirds of all the perforated metal made in this country is punched on either one or the other of these machines. This machine is intended for sheets which are to be finished in passing through once. They are made in various widths of slides and feed rolls. The cut is supposed to show a 50-inch machine, which is about a standard size, as sheets for this purpose seldom come any wider The perforating capacity of this press is sheets up to 50 inches wide, and any length the sheets can be made, and in thickness from thin tin to steel sheets ¼-inch thick. When the press is run on common stock as a flywheel machine at 80 strokes per minute, it is capable of punching 21,920 holes ¼-inch diameter per minute. The press is of the arch or straight sided pattern, which is the strongest form in which iron can be put for a power press. The Stiles patent eccentric adjustment is used which is so arranged as to adjust both pitmen at once, and in this way always keeps the slide in perfect alignment with the bed of the press, a feature which will at once commend itself to the practical operator. These presses are sometimes made so they can be run with or without gear, as the occasion may require. The feed rolls are large and easily handled for receiving the sheets. There are two sets of rolls, one set in front and one in the back, which carry the sheet always the required distance. These feeding rolls are connected with proper gearing, and are driven by the feed rod and block which is keyed to the projecting end of the main shaft. The feed can be regulated to suit any distance from 0 to 1½ inch or even more if special sheets require it. The arrangement of the punches is such that should any one of them break it is an easy matter to replace it by a new one. The weight of the machine complete is about 7500 pounds The builders are the Stiles and Parker Press Company, Middletown, Conn., and 207 Centre street, New York.



SHEET METAL PUNCHING PRESS.

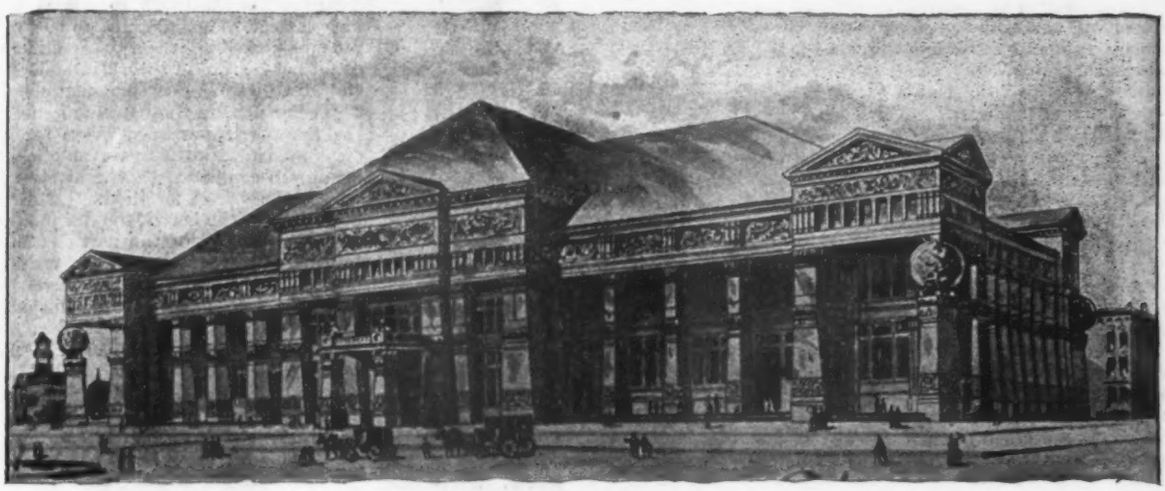
## The St. Louis Ore and Steel Co.

The St. Louis Ore and Steel Company has gone into the hands of a receiver. While this announcement will be a great surprise to the general public, it will be no news to the bondholders of the company, who have for some time been cognizant of the facts leading up to this action, and which are unusual to a degree. Although a receiver has been appointed to take charge of its affairs, the company is in no sense insolvent and does not owe a dollar in the world aside from its bonds. Yesterday's action was made necessary by the failure of the iron mines of Pilot Knob, which were so long believed to be inexhaustible. The property of the company consists of the Big Muddy coal fields near Murphysborough, Ill.; the Vulcan Steel Works in Carondelet, and the Pilot Knob iron mines. These three properties are bonded as follows: The coal fields and iron mines for $1,000,000 and the Vulcan Works for $1,000,000. The steel works have not been operated for years, owing to the failure of the iron mines, so that these made a charge for interest against the other two properties of about $80,000 per year, and the iron mines have been so little productive during these years that almost the entire interest charge of about $200,000 per year was thrown on the coal property. This has caused some complaint. July 1 is interest day, and to prevent a foreclosure by a few of the small holders at the expense of the big ones, it was determined to ask for a receiver. Accordingly, at 2 o'clock this afternoon the Farmers' Loan and Trust Company of Illinois, trustees for the bonds, filed a bill at Springfield, Ill., and at the request of over two-

thirds of the bondholders Mr. E. A. Hitchcock, the president of the company and one of the largest bondholders, was appointed receiver.

### The Colorado Mineral Palace.

We illustrate in this issue the Colorado Mineral Palace now being erected in Pueblo. The erection of this building was first suggested a year ago, and steps were immediately taken to carry the project to completion, and in a short time more than $100,000 was raised. The purpose of the building is to reflect the magnitude of the mineral resources of Colorado. It is erected at Pueblo, because it is thought that this is the most accessible point for such a display. Pueblo is at the entrance of the only waterway pass to the mineral producing counties of the State, and is the seat of the largest smelting industry in the State. It has been suggested that this exposition contains a mine in detail, which should show the practical workings of mining operations, but the managers reply that they do not care to seem to wish to monopolize the attention of the visitors to the State. It is intended that this shall contain only the results of the miners' labor, and those who desire to acquire a more intimate knowledge of the mine will be directed to the mineral districts of the State, thus distributing the crowds through the different counties, and thereby benefiting the State as a whole.



THE COLORADO MINERAL PALACE.

The architectural style of the building is Egyptian, and only products of Colorado quarries and mines will be used in erecting and ornamenting the structure. A row of massive oblong columns, 5 x 7 at the base and 3 x 5 at the top, will extend entirely around the building and upon these the roof will rest. The walls of the building proper are back of these columns, having a corridor 21 feet wide. These walls will be constructed of wood and covered with designs in crusted ores and minerals, native gold, platinum, silver, mercury, copper, &c., and the various ores of the same; specular and magnetic iron, chromic iron, pyrites, galena, nickel ore, quartz, feldspar, mica, beryl, tourmaline, garnet, malachite, hornblende, serpentine, asbestos, wavelite, boncite, baryta, gypsum, calcspar, stalactites and stalagmites, fluorspar, borax, sulphur, graphite, alum, salt, coal in all its varieties, ochre and other minerals used as pigments. Pilasters of white or colored marble, alabaster, onyx, agatized wood, obsidian, and everything of a mineral nature that can be used with artistic effect will find a place inside and outside of the edifice.

Along the interior is a row of columns 14 feet from the walls and the same distance apart. The pillars and the corresponding pilasters against the walls are inclosed to a hight of 10 feet with plate glass, inside which will be displayed the specimens which are too valuable to be left unprotected. There are about 50 pillars and pilasters in all. In the centre of the roof is a dome nearly 100 feet in diameter and rising to a hight of 70 feet from the floor. The frieze will be covered with large, paper-mache representations of the silver dollar, overlapping each other entirely around the dome. To the right and left of the large dome are 12 small, shallow domes, and all of these, as well as the large one, will be coated with polished specimens of quartz and minerals. There will be in the crown and around the base of the domes electric lights, which will cause the whole display to sparkle and shine with great splendor. The building is lighted entirely by artificial means, all exterior light being excluded, thus giving the whole a brilliancy which could not otherwise be attained. In the center of the building a prismatic fountain will play, while facing the main entrance is a large stage on which will be given concerts by the leading orchestras of the country, and which may be used for public addresses. The stage will be handsomely mounted with appropriate Rocky Mountain scenery, and down the rugged rocks will pour a genuine mountain brook. To the right and left of the stage, and in the rear of the building, there will be various dressing rooms, offices for the secretary and two large rooms in which it is hoped may be gathered a mineralogical library and a permanent museum.

The mineral required is of three kinds: mineral for decorating, mineral having a "commercial value" for exhibition, and mineral having "scientific value" for display. Of the latter class there are numerous splendid cabinets in the State formed by parties who have made mineralogy a pastime study, and a number of these have been offered, making an aggregate of 5000 fine cabinet specimens. It is also intended to add an exhibit showing the different geological conditions in which the principal minerals are found, thus giving the display an educational feature. When the fact that Colorado has within its confines 80 per cent. of all minerals known to mineralogists is understood, then an adequate idea of the magnificent possibilities of such a display can be conceived.

The management of the Palace have had an expert visit every mine of prominence in Colorado with the result that a general interest has been aroused among the mine owners and thousands of the finest specimens have been forwarded to Pueblo. It is expected that the value of the exhibits offered will exceed $1,000,000, and that this will be the most comprehensive and elaborate display of minerals ever attempted. The building at this date (June 25) is wholly completed without, and almost finished within and ready for the decorations. It is expected that it will be completed and ready to throw open to the public by September 15. It is proposed to make the exhibition permanent, and to keep the Palace open the year round with a nominal admission fee. It is also the intention of the management to duplicate both the building and the display at the World's Fair in Chicago in 1892.

The building, as erected, is 242 feet in length, 128 feet in width and 70 feet in hight. There will be used in lighting nearly 3000 incandescent electric lights, the plant for which is placed in the basement of the building. The company controlling the exhibit is composed of Donald Fletcher, an ex-president of the Chamber of Commerce of Denver, as president; Geo. H. Hobson, president of the Stock Growers' National Bank of Pueblo, as vice-president and chairman of the executive committee; A. H. P. Baxter, president of the American National Bank of Pueblo as treasurer; and Thos. F. Nelson as executive secretary. Among others interested are M. D. Thatcher, president of the First National Bank of Pueblo; A. W. Chamberlain, vice-president of the Chamberlain Investment Co. of Denver; Henry C. Brown, of Denver, and other capitalists of Pueblo, Colorado Springs and Denver.

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An ironmaster in San Francisco, James W. Kerr, of the firm of Steinger & Kerr, proprietors of the Occidental Foundry, shot and instantly killed an apprentice employed in the Vulcan Iron Works. The shooting was the outgrowth of an assault on C. J. Clausson, a non-union molder. Clausson and Kerr were assaulted by a crowd of strikers on the street, and, being worsted, Kerr drew a revolver and fired, with the result stated.

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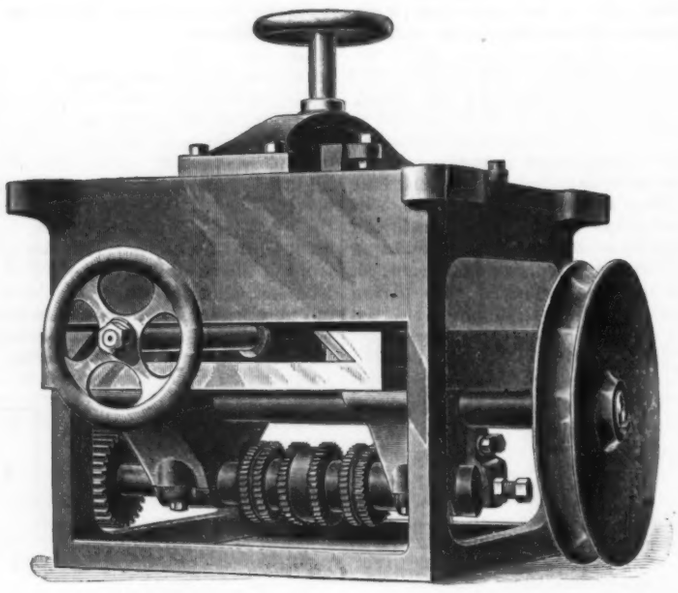
A most satisfactory report comes from the speed trial of the new cruiser, Philadelphia, which was made last week off Block Island. This splendid ship steamed 19$\frac{5}{12}$ knots per hour against the tide, which is faster going than ever made by any vessel of her class. As the premium offered by the Government amounts to $50,000 for each quarter knot made over 19 knots an hour, this achievement will entitle the Messrs. Cramp, her builders, to $100,000 above the contract price.

### Valve Port Milling Machine.

This machine is designed for milling out the ports in the valve faces of steam cylinders, and is very valuable for that purpose, as it duplicates the work exactly and in the shortest possible time. It consists of a frame that is of itself a template resting on the seat the studs are placed in, and supports the steam chest; this frame carries another frame, which has two distinct movements, carrying milling cutters that are arranged on a mandrel with space washers, so that the bridges and ports can be all cut to dimensions at one operation. The inner frame is fed down into the cut by the hand wheel and screw shown on top, and is fed the length of the ports by the hand wheel at the end of machine. It is operated by a rope belt similar to that used for driving drills, &c. This machine is much lighter than the cylinder and can be readily placed in position, the stud holes being used for that purpose. It is built by Pedrick & Ayer of Philadelphia, Pa.



DAVIS'S VALVE PORT MILLING MACHINE.

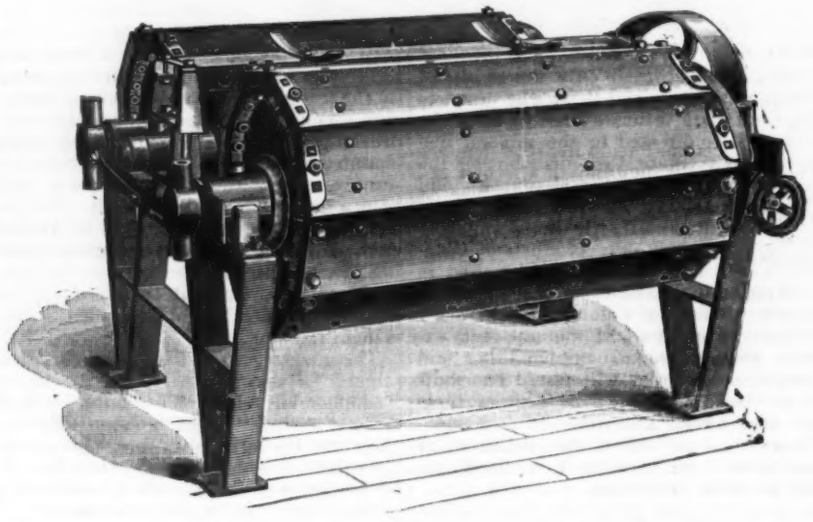
### A Trip to Watauga, Tenn.

A party of some 25 gentlemen, more or less directly connected with the iron trade, have recently returned from a flying visit to Watauga City, Tenn., the point selected for extensive operations by the East Tennessee Mining and Improvement Company. This company with a capital of $1,000,000 have selected this point for the development of their extensive steel and lumber interests. They have under construction a line of four miles of railroad up the valley of the Watauga to connect their town site with the E. T. & W. N. C., and will continue the same line a short distance across the E. T. V. & Ga. tracks to a connection with the C. C. C., thus not only placing the manufacturing interests at Watauga in direct connection with these two great systems, but also bringing the purely Bessemer ores of the Cranberry district 30 miles over favorable grades to Watauga, the natural point of combination with the fuel from the Big Stone Gap or Pocohontas fields. The deposits of magnetic Bessemer ore are extensive and of undoubted quality, being low in phosphorus. Watauga City, Tenn., is on the main line of the E. T. V. & Ga. Railway, which at this point crosses the Watauga River, a beautiful stream of freestone water fresh from the granite ridges of the North Carolina and Tennessee mountains. The immediate surrounding country is rich limestone farm land, undulating, and furnishes all the natural advantages of drainage, abundant water supply and most favored climate, essential to successful town development. John W. Hoffman, of Philadelphia, who is president of the new company, entertained the party in the most handsome manner, and there is reason to believe that this visit is, with some of the party, merely a preliminary to many other visits in the same direction of an important business character. H. McCormick, of Harrisburg; Geo. Brooke, of Birdsboro; Chas. Himrod, of Chicago; Colonel Embick, of Williamsport; Jones Wister, E. J. Etting, R. A. Williams, J. J. Williams, Moncure Robinson and about ten others, including the representative of *The Iron Age*, made up the Philadelphia delegation.

The new Astor House near Central Park will be 14 stories high and cost $1,500,000. The Dugro-Wagner building, in the same locality, will be 11 stories high and will cost $650,000.

### Two-Way Exhaust Tumbling Barrel.

In connection with the cleaning and brightening of metallic articles in a dry state, in a tumbling barrel, the employment of drafts of air to carry away the dust as fast as the tumbling loosens it from them has only of late years become quite general, though its limited use in connection with some special lines of work can be traced back half a century. The efficiency of the air arises from its power as it rushes into the barrel to cut the films of dirt that envelop the articles to be cleaned, and to remove it at once; this accomplished, and clean metal brought into contact with clean metal brightness of the surfaces soon follows. With the employment of air less tumbling is required, and so the blunting of the sharp edges and corners of the goods is avoided; a smaller number of barrels is required to do a given amount of work; better work is done in a shorter time; damage from dust to the machinery is avoided, thereby increasing its durability; a nuisance to the establishment is abated; cleanliness in the room is attained and health is preserved and comfort enjoyed. In the hands of incompetent men much valuable work was destroyed in the tumbling room, causing losses which soon amounted to large sums, yet men possessing the right qualifications could not be hired to work in such rooms and breathe their dust laden atmosphere. The conditions in the barrel are such that the dirt after it has been taken up by the air is knocked down again and again by coming in contact with the articles with which the barrel is filled. Removed at both ends of the barrel, the distance at the farthest that any of the particles have to be carried amidst all the obstructions is only half the length of the barrel. The true principle is to use air unsparingly when it will help the work, and save it by shutting the wind gate when it is not required. Seldom do all the barrels that are connected with an exhauster require the air at the same time, therefore, its capacity need not be overtaxed. The two-way exhaust barrels herewith illustrated receive the air through slight openings in the joints (or if there be no joints, as when cast whole, through small perforations made in the sides or ends) then it is drawn out simultaneously at both ends of each barrel through hollow journals which are connected by pipes, through the intervention of wind boxes, with the fan or other means by which the draft is created. Henderson Bros., Waterbury, Conn., are the manufacturers of these barrels.



TWO-WAY EXHAUST TUMBLING BARREL.

# THE WEEK.

The rise in values of well located property in New York City is shown by a sale which took place last week. Twenty-eight years ago a plot on 118th street and Lenox avenue sold for $1200. In the sale just recorded one-fifth part of the same sold under the hammer for $5350.

An "onyx trust" is one of the improbable things, as some of the finest onyx in the world is found in California, Arizona and other points in the far West. J B. Coleman, of California, referring to discoveries in Mexico, says: "The onyx of Solano County is unexcelled in beauty. Larger slabs are quarried there than in any place in this continent. The quarries are only five miles from the water, and the onyx from Mexico has to be transported hundreds of miles. The California onyx is translucent, and requires no bright trimmings to display it. If it were not the best California's millionaires would not ship it to New York to furnish their Eastern houses. C. P. Huntington has just shipped a big quantity for his new house in New York City."

Artificial ice is selling at a lower price in the Southern States than the natural article is up here. In Savannah, for example, manufactured ice by the ton ranges from $5 per ton to $7.50, the highest figure.

The Canadian banks are every year loaning increased amounts to traders. The situation to-day, as compared with three years ago, shows an enlargement of nearly $26,000,000 in mercantile loans, an expansion of $750,000 in circulation, and a decrease of $3,600,000 in the foreign balances.

More than three-fifths of the applications at Washington for passports come from German-American citizens. Fearful that the German military law will be invoked against them, they also carry their naturalization papers to assure them of protection.

A steam pilot service has been adopted by the Virginia Pilots' Association which has contracted with Neafie & Levy for an iron boat 130 feet long with powerful compound engines.

The largest plate glass works in the United States are to be erected at Irwin, Pa.

The Canadian Pacific Railroad has contracted for the building of a second railroad into the Northwest, penetrating 330 miles at right angles with the main line from Calgary. The region is said to abound in coal and petroleum.

Appraisers appointed by the court to investigate the affairs of the American Life Insurance Company, of Philadelphia, find that $800,000 have unaccountably disappeared. A statement submitted shows that nearly $500,000 was loaned to John J. Macfarlane, president, who is now a refugee. Just before the collapse the securities were exchanged for bonds and stocks almost worthless.

Mr. Leander J. McCormick, the millionaire agricultural implement manufacturer, has sold out his large plant at Chicago for over $3,000,000 and retired from business. It is stated that some of the most valued and highly prized ornaments in his palatial parlor at Chicago are cooking utensils used by his grandmother at the old home in Rockbridge.

When asked what would be the next legal proceeding instituted against the Sugar Trust, Deputy Atty.-Gen. Whittaker said: "The North River Sugar Refining Company are now in the hands of a receiver, you know. In view of the Court of Appeals' decision the receiver will go on and sell thier property and distribute the proceeds among the creditors and stockholders."

McDougall, of the Duluth Steel Barge Company, is inquiring into the feasibility of sending his "whale backs" to the sea via the St. Lawrence River.

There are eight companies in Kansas preparing to manufacture sugar, and the total daily capacity of the mills is 1450 tons of field cane; total output of sugar, 94,500 pounds; of molasses, 13,500 gallons.

The garbage furnace in Pittsburgh works so well that the Bureau of Health recommends the building of three more in different parts of the city.

Chinese cotton, known as Nankeen, is attracting considerable attention among the cotton planters of the South. The cotton is described as fine in texture, very long fiber and a beautiful golden color. It is sold at an advance of from 25 to 33 per cent. above ordinary cotton, and finds a ready market.

Wyoming will be admitted as a State, and perhaps Idaho, too.

Cleveland expects to market this year 7000 tons of grapes.

The Augusta, Ga., *Constitution* made an examination of the tax returns of 1991 farmers in that vicinity for the years 1884 and 1889. The net gain of the whole number was $905,712. The average value of each of the whole number of farms, with their stock, was about $3200 in 1884 and $3800 in 1889. Applying this calculation to the 100,000 white farmers of Georgia—the *Constitution* excludes colored farmers from its list—it finds that they have gained $45,000,000 in wealth in the past five years.

The proposed plate glass syndicate is referred to by a special despatch which says: John Pitcairn, of the Pittsburgh Plate Glass Company, is in England negotiating for the close of options on all the plate glass concerns in the United States. The syndicate interested in the deal is headed by Pitkington Bros., the extensive plate glass manufacturers of St. Helens, England, who for many years did an enormous business in this country, and until recently had a branch house in New York. The plants which they intend to secure are nine in number. Two at Ellerton, Ind., and Charleroi, Pa., are not yet in operation. Three are owned by the Pittsburgh Plate Glass Company, who are largely interested in the syndicate project. The others are at Butler, Pa.; Crystal City, Mo.; Kokomo and New Albany, Ind. They have an output approximating 25,000,000 feet a year.

The first cotton mill in Ceylon is just starting up in hope of competing successfully with India in supplying China and the Straits with cotton cloth.

The Board of Experts charged with the duty of examining the transportation and terminal problem at the Brooklyn Bridge has been filled by the appointment, by Mayor Chapin, of Prof. George W. Plympton, of Brooklyn, as the third member. He will act with Mr. Spencer, appointed, by Mayor Grant, and Mr. Buckholtz, appointed by President Howell, all men of high professional standing. A board of railroad experts have already passed upon the questions at issue, and the final action of the bridge managers cannot even be conjectured.

South American papers speak of a secret alliance recently formed between Brazil, the Argentine Republic and Peru, ostensibly for the preservation of tranquility in that part of the world, but more truly to resist the threatened advances of Chili, whose increased military and naval forces are contemplated with alarm. Mr. Valente, the Brazilian Minister to the United States, said that there was no foundation for the story. The relations between Brazil and Peru are friendly.

Exports of leather to England are remarkably large. One purchase last week comprised 1000 tons.

The question about removing the steam heating pipes from lower Broadway is assuming a more serious aspect. President Andrews will resist any attempts to invade chartered rights.

The new census shows that some of the smaller cities of the West have made wonderful gains. Lincoln, the capital of Nebraska, had only 13,000 inhabitants in 1880. Now, complete returns show over 53,000. Des Moines, Iowa, has jumped from 22,000 in 1880 to over 50,000, another splendid gain. Dayton, in Ohio, is not far behind in rapidity of growth. The 38,000 people of 1880 have become 60,000.

The Pennsylvania assessment returns, just completed, show that the aggregate value of all property taxable for county purposes has been increased $153,753,981. All the counties return money at interest, with the additional amount of $17,379,281 over the previous year.

The city of Wilmington, Del., which vies with the city of Chester, Pa., in shipbuilding enterprise, has a population of 62,000, a gain of 47 per cent. since 1880.

The New York Commissioner of Public Works has contracted to expend nearly $500,000 for improved pavements in Park row, Canal street, East Broadway, Elizabeth street and Eighth avenue.

After a strike of four days' duration the employees of the Illinois Central Railroad Company returned to work on Friday night. Business is resumed on the former basis in all respects. The strikers' demand, that Division Superintendent Russell should be dismissed, was not complied with, but they are of the opinion that his powers are somewhat curtailed.

Of the two new cordage companies in Canada each have a capital of $1,000,000, and have obtained control of all the factories in the Dominion, with a single exception.

A Western paper is so unkind as to remark that Chicago is bound to beat Philadelphia's 1,040,000 census, if she has to count every gopher in her prairie suburbs.

The Anglo-American gas movement has filed a certificate of incorporation at Trenton, N. J., under the title of the American Gas Investment Company, with a capital stock of $50,200,000. The old $200,000 is founders' stock. There are $10,000 of the above amount paid in, and George S. Bixby, H. W. Thorne and William Talcott are named as directors. The objects are to construct, acquire, own, manage and operate works for the manufacture, distribution and supply of light, heat and power by gas, electricity or other means, and to acquire stocks and properties of other corporations formed for any similar purpose, and to deal in the same, &c.

The Board of Managers of the Chicago Exposition have organized by the selection of ex-Senator Palmer, of Michigan, for the presidency, and Mr. Dickinson, of Texas, as secretary. Thomas Wetherell Palmer, at present United States Minister to Spain, was born in Detroit January 25, 1830. He spent a year and a half at Ann Arbor University, but his eyesight failing he went to Spain in 1848, traveling on foot through that country for nearly a year. On his return he went into mercantile business, but his store was burned and he was financially ruined. In 1853 he

engaged in the real estate business in Detroit. Two years later he embarked in the lumber trade, which, with the purchase and sale of pine lands, has made him worth $1,500,000. He was elected United States Senator in 1883, and a week after his term expired, in 1889, he was appointed Minister to Spain.

The population of New York City, like that of London, varies with the time of day, but a very fair approximation can be had by counting in the suburban towns as follows:

| | |
|---|---|
| New York | 1,627,000 |
| Brooklyn | 800,000 |
| Long Island City | 30,000 |
| Jersey City | 162,317 |
| Newark | 200,000 |
| Elizabeth | 40,000 |
| Paterson | 78,105 |
| The Oranges | 40,000 |
| Total | 2,977,432 |

Hoboken, with over 30,000 additional inhabitants, which has been omitted, carries the total to above the 3,000,000 mark.

The sound steamer Connecticut blew out her cylinder head on Sunday morning.

Plans have been perfected for a grand union depot at St. Louis.

Superintendent Porter estimates the population of the United States at 64,500,000, an increase of more than 14,000,000 within a decade.

The Connecticut Railroad Commissioners approve of the proposed parallel road from the New York State boundary line to New Haven, to cost $5,000,000. It will avoid all grade crossings, and all bridges will be of stone or iron.

Chief Arthur successfully arbitrated a pending strike of railroad engineers and firemen at St. Louis.

Reports come from Europe that within the past few days the relations between England and France have suddenly grown strained, arising primarily from the determination of France and Russia to call the legality of the Anglo-German agreement into question and demand its reference to a court of the European powers.

New York is growing with surprising rapidity. The prediction is made, with confidence, that between January and September of the present year at least 1700 buildings will have been added to this city, representing an increase in the wealth of the city and in taxable values of not less than $40,000,000.

The West Shore road has given out the contract for a big elevator, to cost $1,500,000. It will be built on Pier 8, Weehawken

A book on Keeley's discoveries has been published in London. A contemporary truly observes: "If it confines itself strictly to facts it must be a very small work."

The Mayor of Baltimore on Saturday accepted the proposition of the Brush Electric Light Company to light the city for five years at the rate of 35 cents per light per night with electric arc lights of not less than 2000 nominal candle power.

An Ottawa dispatch says a company of Boston capitalists are quietly developing the foundations of a seaport at the east end of the Straits of Canso, Nova Scotia, five miles from Port Mulgrave, the present terminus of the Intercolonial Railway. An extensive water front has been acquired, to be known as Terminal City, whence a line of steamships to Liverpool will be established. When the railroad is completed and wharves are built, all passengers and mails from Europe will be delivered in New York or Montreal one day sooner than by any other route.

The Columbia River must be bridged, so say the officials of the Union Pacific Railroad, and this can be done at Vancouver at a cost, perhaps, of $1,000,000.

# MANUFACTURING.

### Iron and Steel.

Two or three of the rolling mills at Wheeling, W. Va., are almost wholly engaged in the manufacture of muck iron. They are being furnished with the pig iron and receive so much per ton for converting it into muck bar. The greater part of the pig iron is sent to Wheeling from the Mahoning and Shenango valleys, while the most of the muck bar is sent to Pittsburgh.

Dennis Long & Co., of Louisville, Ky., have secured contracts for water pipe from the city of Chicago amounting to $112,350. On the 7th inst. a contract is to be let for 120,000 feet of 6-inch pipe.

In answer to the report that the extensive plant of Brown, Bonnell & Co., at Youngstown, Ohio, would be closed down by reason of the order of the court to sell the property, the following announcement has been made by Receiver Brown: "This sale and the transfer of the property will interrupt the work of the mills but a few days, if at all, and the order of sale expressly provides that the purchaser shall give bonds to carry out all contracts of sales made by me which may be unfilled at the time I give him possession of the property." Receiver Brown states the plant will be run as usual after July 1, and that there will be no shut down.

The Carbon Iron Company, of Pittsburgh, which manufacture universal plates by the direct process, have posted the following notice in their works: "After June 28 we will close indefinitely our reducing furnace department and all employees in this department will no longer be considered in the employ of the company, and can have their money in full at any time after above date by calling at the office of the company." This action has been taken as a result of demands made by the puddling force which are considered unreasonable by the company.

Park, Brother & Co., Limited, proprietors of the Black Diamond Steel Works, at Pittsburgh, are adding six tubular boilers to their steam capacity in the plate mill. They have been put up on property recently purchased and adjoining the works, and their erection in that location saves floor room in the mill which could not well have been given up for the purpose. It is probable that the whole of the boiler plant of the firm's plate mill will be moved to the new location.

The Ohio Falls Iron Company, of New Albany, Ind., signed the Amalgamated scale on Friday, the 27th ult.

We recently noted the fact in these columns that negotiations were pending for the sale of four or five iron and steel plants in the Mahoning Valley to an English syndicate. Several weeks ago representatives of the different plants sailed for Europe to confer with the members of the syndicate looking to the consumation of the project. Advices have been received to the effect that all negotiations are off and that the sale will not take place for the present at least.

We are advised that the report that the Raney & Berger Iron Company, of New Castle, Pa., were about to commence the erection of an additional blast furnace is without foundation.

The Kilmer Mfg. Company have let the contracts for the erection of a large rod mill at Newburg, N. Y., to be 160 x 100 feet.

The National Tube Works, McKeesport, Pa., have declared a quarterly dividend of 3 per cent, payable July 1, this being an increase of one-half of 1 per cent. over previous quarterly dividends.

The American Tube and Iron Company, of Youngstown, Ohio, are erecting a machine and blacksmith shop 125 x 60 feet, two stories high.

The Alikanna Rolling Mill, of Alikanna, Ohio, will be moved to McKeesport, Pa., the company having purchased 12 acres of ground near Riverton. The works will employ about 500 men.

### Machinery.

A. P. Granger, of 1754 Larimer street, Denver, Col., is placing on the market two new inventions for milling dry ores. The roller stamp mill, which is adapted to crushing dry ores to an even granulation, producing but little pulp, and the dry ore separator which separates the mineral from the worthless rock matter. A plant consisting of three of the roller and stamp mills and three dry ore separators is being put up at Bowie Station, Arizona, on the Southern Pacific Railroad. Tests have been made on the ores of the mines there with good results, a trace of lead and a trace of gold only remaining in the trailings. The capacity of each machine is from ½ to 1 ton per hour, according to the ore.

On June 21 the Westinghouse Air Brake Company, of Pittsburgh, declared their regular quarterly dividend of 4 per cent., payable on July 1, 1890.

The Leechburg Foundry and Machine Company, of Pittsburgh, with works at Leechburg, Pa., have more work on hand at the present time than ever before in their history. They have recently received an order from the Belleville Steel Company, of Belleville, Ill., for a hydraulic blow shear, with intensifier, designed by Henry Aiken, the well-known mechanical engineer, of Pittsburgh. This shear works under a pressure of 600 pounds to the square inch, and is capable of cutting a section of hot steel 10 by 12 inches. Its total weight, when completed, is about 60,000 pounds. The shear is very simple in construction, and is claimed to be more durable than the shear operated by steam power.

The new plant of the Union Foundry and Machine Company, recently erected on the south side of Pittsburgh, will soon be ready to commence operations. The foundry, which is 90 x 125, made a successful trial heat last week. It is equipped with two cupolas, 60-inch and 40-inch, having a combined capacity of 25 tons. At convenient points in the foundry are erected two 25-ton steam cranes for handling flasks and the ladles of melted iron. For the purpose of making machine molded gear wheels, which are a specialty with the company, a large pit is being made near the cupolas and within reach of the cranes. The machine shop is fitted with heavy tools for general machine work. It is 60 x 132 feet, two stories, the second story being used as a pattern making shop. Both the foundry and machine shop are expected to be in full operation by August 1.

Some time ago the boiler makers of Pittsburgh and vicinity made a demand on their employers that their day's work be limited to nine hours without any reduction of wages, to take effect on July 1. At a meeting of the manufacturers held in Pittsburgh on Friday, the 27th ult., it was decided not to grant the demand. It is feared a strike will occur unless a satisfactory arrangement is made.

Mines & Peck Mfg. Company, successors to Beecher & Peck, of New Haven, Conn., report that they are so busy on orders both for the Peck drop press and drop forgings that they are running overtime and have largely increased their force of skilled mechanics in both departments.

The Kilby Mfg. Company, of Cleveland, Ohio, will shortly commence the erection of two additions to their machine shop. One will be 60 x 60 feet and the other 50 x 100 feet.

The Bangor, Maine, Foundry and Machine Company recently cast a wheel weighing 4500 pounds for the Bodwill Water Power Company, of Milford.

A corporation to be known as the Devonshire Mfg. Company have been organized at Portland, Maine, for the purpose of manufacturing all kinds of machinery.

### Hardware.

The D. W. Bosley Company, Chicago, Ill., incorporated January 1, 1890, with a capital stock of $50,000, are building a factory for the manufacture of the Peerless Rubber Window Cleaners and Double Rubber Weather Strips, at 208 and 210 West Washington street, to be occupied by them July 1. This company are successors to D. W. Bosley & Co., formerly of 273 East Madison street, Chicago, who were engaged in the manufacture of these same goods.

The Jeffery Mfg. Company, Columbus, Ohio, manufacturers of chain belting, elevating and conveying machinery, mill and mining supplies, &c., refer to the fact that they are busy in all departments, especially in their chain elevating and conveying machinery line, with the demand constantly on the increase. We are advised that it will be to the interest of those who use chain to send for their new catalogue, as they have recently made a large number of new chain link patterns.

At a meeting of the directors and stockholders of the Western Automatic Machine Screw Company, of Elyria, Ohio, it was decided to erect an additional building to provide for the necessary facilities to meet their rapidly growing trade. Work on the new building will be commenced soon.

J. D. Allison, Cromwell, Conn., manufacturer of hammers and nail pullers, advises us that he is kept constantly employed in making goods for jobbers, with their special stamp and labels.

It may be remembered by some of our readers that in March of the present year Heller & Bros., Newark, N. J., manufacturers of horse rasps, files, blacksmith's tools and clay crucible cast steel, met with the loss of their tool and steel works by fire. We are advised that they have rebuilt, putting up strictly fireproof buildings and increasing their former

room in these departments by about 2500 square feet. These buildings are nearing completion, and will be occupied by them in the near future.

The Detroit Steel and Spring Company, Detroit, Mich., issue a circular letter, under date of June 19, in which they report that on the day previous they had a fire in their crucible and hammer department, burning the building to the ground and doing considerable damage to their hammers and other machinery. They further state their intention of rebuilding in a better and more substantial manner, increasing their facilities. Other departments are undamaged, and there will be no delay in filling orders. Fortunately they had a good supply of crucible and spring steel on hand, a list of which is sent, from which they state they will be pleased to fill orders.

Wm. H. Haskell Company, Pawtucket, R. I., manufacturers of bolts and coach screws, advise us that they are still making their full line of standard goods, with all the new and special styles demanded by their customers, requiring constantly new and improved tools to perform this kind of work.

B. J. Greely, 715 Washington street, Boston, Mass., reports that he is receiving encouraging reports from those using Greely's cork extractor for the hardest kind of work, and with perfect success.

A. J. Hayes, of 22 Artizan street, New Haven, Conn., advises us that the demand for the goods handled by him had become so great that he was obliged to seek another location with greater facilities. He has removed from 57 Long Wharf to 22 Artizan street. Mr. Hays puts up wire in small coils for the hardware trade.

P. F. Burke, of 360 and 362 Dorchester avenue, Boston, Mass., manufacturer of patent steel toe calks, horseshoers' foot vises, derricks, hoisting, gearing and contractors' supplies, advises us that, to accommodate the growing demands of his business, additions have been made to his works, increasing their capacity one-third.

The Goshen Sweeper and Wringer Company, formerly of Goshen, Ind., advise us that they have organized a large stock company at Grand Rapids, Mich., where they will at once move, and expect to be in running order in their new plant by July 17. They refer to the fact that the standard of their goods will be maintained, and every effort made to produce the best sweepers on the market.

The Hartford Machine Screw Company, of Hartford, Conn., advise us that they have recently doubled their capacity for the production of all classes of milled machine screws, special turned work for electrical appliances and watch work, in addition to their regular lines. They allude to the fact that they have 90,000 square feet of room devoted to their specialties, and carry beside a full line of stock of the best manufacture adapted to screw work and other specialties.

### Miscellaneous.

The Secretary of State of Illinois recently issued licenses to the following corporations: Baker Morton Company, at Chicago, to manufacture gas engines; capital stock, $2,000,000; incorporators, Louis Wahl, Harrison J. Baker, A. H. Morton. Standard Steel Brakebeam Company, at Chicago, to manufacture and sell brakebeams for railroad cars; capital stock, $1,000,000; incorporators, Earl Glogan, A. M. Sullivan, A. M. Stewart. H. Phillips Mfg. Company, at Chicago, to manufacture extension plyers and other specialties; capital stock, $50,000; incorporators, Henry Phillips, H. W. Smith, Frank Shopland. Gathmann Ordnance Company, at Chicago; capital stock, $500,000; incorporators, Louis Gathmann, August Gathmann, Henry Gathmann. Sinclair Mfg. Company, at Chicago, for manufacturing purposes; capital stock, $25,000; incorporators, Will. Sinclair, M. G. Sinclair, W. Sinclair, Jr. Pullman Electric Motor Company, at Chicago, to manufacture sewing machines and electric motors; capital stock, $100,000; incorporators, L. Proudfoot, C. E. Rand, Jennie M. Bowles. American Shot and Lead Company, at Chicago, to manufacture shot, lead pipe and metallic goods; capital stock, $3,000,000; incorporators, Frank S. Weigley, A. C. Bulkley, E. E. Gray.

The Wilson Lace Clasp Company, Somerset, Mass., have hired a two and one-half story building, 65 x 24 feet. On the lower floor they are putting some machinery tools at a cost of $3500, the other two floors to be used in manufacturing their lace clasps and for a packing room.

All the old bridges on the Delaware division of the Erie Railway have been replaced with iron.

## SOUTHERN MISCELLANY.

Work has commenced on the plant of the American Arms Company, at Bessemer, Ala.

The iron foundry of S. W. Long & Co., of Ownesboro, Ky., has been bought by W. F. Long and W. F. Bransford, who will continue the business.

An annex, 75 x 53 feet, is being added to the building of the Brunswick Foundry and Machine Works, of Brunswick, Ga. The business of this concern has undergone a gratifying increase in the past few months which now necessitates this enlargement.

Contracts for the buildings comprising the plant of the Piedmont Foundry and Machinery Company, of Piedmont, Ala., have recently been awarded, and work will commence at once. The foundry will be in circular form, 48 feet in diameter, and the machine shop is to be 32 x 48 feet.

At Bristol, Tenn., the Bristol Pioneer Steel Plant and Rolling Mill Company, have been organized to build two Bessemer and two basic steel furnaces, and have perfected a permanent organization, with T. H. Spalding, of West Bergens, Pa., as president; Justice Cox, Jr., as treasurer, and L. B. Stubbs, manager.

Considerable apprehension is felt by the citizens of Wilmington, N. C., owing to a rumor that has just gotten into circulation there that the Wilmington and Weldon Railroad Company is seriously considering the advisability of moving its machine shops from Wilmington to Rocky Mount.

The plant of the Birmingham, Ala., Railway Supply Works, recently destroyed by fire, will be rebuilt as rapidly as possible.

Henry Essex, W. H. Smith, G. N. Henson and others have incorporated the North Chattanooga Engine Company, at Chattanooga.

Work has been started on the new car wheel works to be built at Bluffton, Ala.

A furnace is to be built at Elkton, W. Va., by the Ohio Valley Improvement Company.

The North Carolina Plow Company, at Cary, N. C., are increasing their capacity, owing to the enlarged demand for the product of their factory.

The Cleburne Foundry and Machine Company, newly organized at Cleburne, Texas, intend building a foundry immediatelv.

The Gracey-Woodward Iron Company have been organized at Clarksville, Tenn., to operate machine shops and build a furnace.

The Mordinton Mfg. Company have been incorporated by J. A. Washington, J. V. Simmons, G. T. Light and others at Charlestown, W. V., to establish car works.

The Rutland Mfg. Company are organizing at Anniston, Ala., and will erect plant to manufacture apparatus for heating and ventilating purposes. C. W. Noble is at the head of the enterprise.

A company with a capital stock of $100,000 is being organized at Fort Worth, Texas, by D. F. White and others, to buy the Fort Worth Stove Works, upon which property they have an option at $60,000.

It is stated that a stove manufacturing company, with $125,000 capital stock, are negotiating for the removal of their plant from Louisville, Ky., to Knoxville, Tenn.

At Chattanooga, Tenn., the Gibson Agricultural Works have been incorporated, with David Gibson as president and A. L. Cayzer as secretary. The plant will be increased in capacity, orders for the new machinery now being placed.

The W. M. Farrow Fire Arm Works, of Holyoke, Mass., are to be removed to Tennessee, occupying temporary buildings at Mason until its own plant can be constructed in Memphis.

W. E. Lucas, president of the Morgan Mfg. Company, at Spartanburg, S. C., has been busy working up a stock company to establish an iron foundry. The capital stock, $25,000, has been subscribed, and the enterprise will be at once pushed to a final culmination.

The Cherokee Iron Furnace, at Cedartown, Ga., which has been idle for two years, has again gone into blast.

While drilling for oil at the Colfax well, in Marion County, W. Va., recently, the drill at a depth of 18 feet struck a ledge of iron ore 5 feet thick; a few feet deeper a second vein 3 feet thick was struck.

With the progress of electricity in the South announcements of new electrical manufacturing enterprises are now frequently made. One of the most important enterprises of this character recently inaugurated is the Wenstrom Consolidated Dynamo and Motor Company, organized at Baltimore with large capital. The company have secured a 12-acre site at Calverton, and water-power of 400 horse-power. The plant to be built will consist of two stories 100 x 250 feet, and costing $100,000. When in operation the works will give employment to 600 men.

The Elkins Land and Improvement Company, recently incorporated at Elkins, W. Va., contemplates the erection of an iron furnace.

A machine shop is to be among the new enterprises at Rockingham, N. C. Steps are being taken in that direction by J. A. Wright & Bro.

It is stated that the West Point File Factory, at West Point, Miss., has been sold to Moseby & McCord, who will enlarge the capacity of the plant.

The officers of the Berry Signal Lock and Target Company, recently incorporated at Chester, S. C., are: J. J. McClure, president; G. B. White, vice-president; J. K. Henry, secretary and treasurer.

A machine shop 32 x 114 feet, and a blacksmith shop 28 x 50 feet, both at a total cost of $22,000, will be erected at Memphis, Tenn., by the Illinois Central Railroad Company.

It is stated that machine shops are to be built at El Paso, Texas, by the Texas and Pacific Railroad Company.

A $200,000 powder factory will be established at Ceredo, W. Va., by a New York company; and at some point in Virginia, probably Roanoke, the newly organized Americanite Mfg. Company, of Washington City, intend establishing a plant for the manufacture of the recently patented explosive.

The Duvall Engine and Foundry Company, of Zanesville, Ohio, have terminated negotiations for the transfer of their plant to Sherman, Texas.

The Foster Hardware Company have been organized at Little Rock, Ark., being the successors of the hardware business of W. C. Foster.

Fort Payne, Ala., manufactured her first steel nails on the 11th inst.

The Napier Iron Company have been organized at Henryville, Tenn., by E. W. Cole and others, to build an iron and steel plant at that place.

A stock company is being formed to purchase 2700 acres of iron ore lands on the Norfolk and Western's Ohio extension, now building. F. P. Cummings, Pocahontas, Va., is interested.

Edmund S. De Luse, Chief Engineer, United States Navy, died on June 25, at New Brighton, S. I., aged 61 years. He was born in this city on May 15, 1829. He entered the service when 20 years old as Third Assistant Engineer in the office of the Engineer-in-Chief. In 1851 he was promoted to Second Assistant Engineer, and two years later as First Assistant. In October, 1861, he became Chief Engineer, and was retired in December, 1878, with the relative rank of Commander.

The construction of the plans for the new 7300 ton cruiser is being watched with great interest by all branches of the service. Her machinery is novel in design and the most powerful of any yet built for our navy. The Secretary of the Navy says he wants the vessel to make a guaranteed speed of 22 knots, and Chief Engineer Melville, who has been intrusted with the work of designing her machinery, gives it out that she will make the required amount. The 20,000 horse-power necessary to produce the required 22 knots is to be furnished by a new method of three screws, each attached to a separate engine of the torpedo expansion type. The arrangement of her screws has not yet been fully determined, but every point will be fully considered with a view to getting the best possible results. With all three propellers and engines working under forced draft, 22 knots is the contemplated speed, and with only one screw at work, 15 knots is named as her economical rate, while 18 knots is a fair average when two screws are moving. As soon as the President approves the Naval Appropriation bill a circular to shipbuilders of the country will be issued from the Navy Department regarding the three new battle ships. The minimum speed is fixed at 15 knots, and the same penalties will be exacted and premiums offered as in the case of the Philadelphia.

# The Iron Age

New York, Thursday, July 3, 1890.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, JR. - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.


## The World's Fair of 1893.

The organization of the United States Commissioners of the World's Columbian Exposition at Chicago last week invests the undertaking with a strictly national character. Hitherto the work done has been very largely local. The citizens of Chicago have managed the preliminary arrangements in influencing public sentiment in favor of the choice of their city, and in securing subscriptions to defray the cost of holding the exposition. They have been very energetic and have done exceedingly well. Under the circumstances, inasmuch as Chicago will practically bear all the expense of this huge enterprise, it seems almost an act of injustice that the control of the exposition itself should be handed over to a body of men who have done nothing to assist in its creation. But in order to give the exposition a national character no other course was possible. A governing body had to be formed consisting of representatives from all the States. But even in this respect Chicago gains while appearing to relinquish much. For the time being she will form another capital of the country. She will gain in honor and dignity, by her position as a representative of the nation, both in her relations with the people of the various States and with the subjects of foreign powers. As the time of opening the exposition approaches Chicago will become the cynosure of all eyes, and her name will be oftener on the lips of the people than our political capital.

Henceforth all local considerations will be subordinated to the one grand purpose of making the exposition represent to the fullest extent the greatness of America. While the exposition will be international it will, as a matter of course, consist very largely of American exhibits. No matter how creditable the international features of the fair may be, our domestic producers are relied upon to supply the great bulk of the exhibits needed to make the exposition of 1893 surpass in every respect all other efforts in this line. The representation of every section of the country on the United States Commission should go far in stimulating all our people to take an interest in the exposition. Its national character is a guarantee of fair treatment, regarding which there would always be some suspicion if the management were purely local. Our manufacturers should exhibit their latest achievements, whether in the line of tools, machinery or products, and preparations for such an exhibit should be begun now, in order to have abundance of time to alter, revise or improve by the date fixed for installation.

This step is also an important one, because it firmly establishes the fact that Chicago is to be the world's host. The invitations of the United States Commission will be issued not alone to the people of their own States. They will go out to the nations of the whole world. Briton and German, Frenchman and Russian, Australian, African, Asiatic and all other denizens of the outside world will be invited to come to Chicago and to place on exhibition there the products of their skill, ingenuity or artistic talent. A very great responsibility, however, is thus imposed upon Chicago. She needs to prepare herself for a magnificent reception to her visitors. While she can now boast of grand public and private buildings, fine streets, magnificent boulevards, spacious hotels and a happy community of tireless workers, she should disarm her visitors of the most formidable weapon of unfriendly criticism which now awaits them in the soft coal smoke nuisance. If consideration for their own comfort will not make the citizens of Chicago bestir themselves actively in this matter, it is to be hoped that their novel position as hosts of the world will induce such an effective awakening of public sentiment that the nuisance will be peremptorily abated, and that not only for the duration of the exposition, but for all time.

In looking over the list of members of the United States Commission, which has but recently been published, one cannot fail to be impressed with the high character of all the individuals selected to represent their respective States. They are pre-eminently men of business. Some of them have already had experience in the same line in connection with the Centennial Exposition at Philadelphia. They may naturally be expected to inspire enthusiasm among the people of their own States with regard to the purposes aimed at by the promoters of the World's Columbian Exposition of 1893.

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It is rather a curious fact that, while railroads in many sections of the country aid very materially in industrial development, they seriously retard it in others. Circumstances alter cases, and railroad managers, like other people, are always governed by what affects their immediate interests. The hostility to railroads in the West is greatly promoted by this policy on the part of railroad officials. There are sections of Colorado, for instance, in which manufacturing interests would be of far greater importance if it were not for railroad discrimination. It is asserted by those having had the bitter experience that the establishment of a factory in Colorado is the signal for an immediate and heavy reduction of freight rates on the character of goods which it produces, while at the same time no corresponding reduction will be made on the transportation of raw materials. It therefore happens that local manufacturers are almost wholly restricted to lines of trade possessing advantages which are beyond the reach of railroad regulations.

## Our Large Cities.

In spite of the doubts which have been raised in connection with the preliminary statistics of population of the leading cities which have been given out so far, there is little question that they are reasonably correct. Changes may be found necessary in the case of some cities, but in the majority of instances they will not affect the results materially. The following compilation places side by side the population of 24 of the leading cities, according to the approximate estimates thus far printed, and the final figures of the census of 1880 and 1870.

*Population of the Leading Cities.*

| City. | 1890. | 1880. | 1870. | Rank. 1890. | 1880. | 1870. |
|---|---|---|---|---|---|---|
| New York | 1,627,327 | 1,206,299 | 942,292 | 1 | 1 | 1 |
| Chicago | 1,086,000 | 503,185 | 298,977 | 2 | 4 | 5 |
| Philadelphia | 1,040,499 | 847,170 | 674,522 | 3 | 3 | 2 |
| Brooklyn | 816,000 | 566,663 | 396,099 | 4 | 3 | 3 |
| Baltimore | 437,500 | 332,313 | 267,354 | 5 | 7 | 6 |
| St. Louis | 435,000 | 350,518 | 310,864 | 6 | 6 | 4 |
| Boston | 417,770 | 362,839 | 250,526 | 7 | 5 | 7 |
| Cincinnati | 315,000 | 255,139 | 216,239 | 8 | 8 | 8 |
| San Francisco | 300,000 | 233,959 | 149,473 | 9 | 9 | 10 |
| Pittsburgh | 250,000 | 156,389 | 86,076 | 10 | 12 | 16 |
| Buffalo | 250,000 | 155,134 | 117,714 | 11 | 13 | 11 |
| Cleveland | 248,000 | 160,146 | 92,829 | 12 | 11 | 15 |
| New Orleans | 246,000 | 216,090 | 191,418 | 13 | 10 | 9 |
| Milwaukee | 235,000 | 115,587 | 71,440 | 14 | 19 | 19 |
| Washington | 229,796 | 147,293 | 109,199 | 15 | 14 | 12 |
| Newark | 200,000 | 136,508 | 105,059 | 16 | 15 | 13 |
| Detroit | 197,000 | 116,340 | ..... | 17 | 18 | .. |
| Minneapolis | 180,000 | 46,887 | 13,066 | 18 | 36 | .. |
| Louisville | 180,000 | 123,758 | 100,753 | 19 | 16 | 14 |
| Jersey City | 162,317 | 120,722 | 82,546 | 20 | 17 | 17 |
| St. Paul | 140,000 | 41,473 | 20,000 | 21 | .. | .. |
| Kansas City | 140,000 | 55,785 | ..... | 22 | .. | .. |
| Omaha | 134,742 | 30,518 | ..... | 23 | .. | .. |
| Indianapolis | 125,000 | 75,050 | ..... | 24 | .. | .. |
| Allegheny | 100,000 | 78,682 | ..... | 25 | .. | .. |

Some marked changes have taken place in the rank occupied by the different cities. Chicago, by a phenomenal increase, has risen to the second rank, overreaching both Philadelphia and Brooklyn. Baltimore has outstripped both St. Louis and Boston, while Cincinnati and San Francisco have held their own. Pittsburgh has been a gainer over Cleveland and New Orleans, its neighbor; Allegheny, at the same time, entering the ranks of cities above 100,000 inhabitants. Milwaukee has risen above Jersey City, Louisville, Newark and Washington, and Detroit. It is a curious fact that some of the compilations published do not include the latter city in the lists, and that so far as we are aware of only one estimate of the present population has been given out.

Among the smaller cities, of course, Memphis, St. Paul, Kansas City and Omaha exhibit the greatest gains during the decade. In the East, Scranton has made a good record, rising from 45,850 to 95,000 in ten years, while in the South, Birmingham has jumped from a straggling village of 3000 inhabitants in 1880 to a city of 30,000 population in 1890, and Chattanooga has risen from 12,000 to 45,000 inhabitants. Atlanta has advanced from 37,409 to 65,200.

So far as the whole country is concerned, the record stands as follows:

*Growth of Population.*

| | Inhabitants. |
|---|---|
| 1790 | 3,929,214 |
| 1800 | 5,308,483 |
| 1810 | 7,239,881 |
| 1820 | 9,633,822 |
| 1830 | 12,866,020 |
| 1840 | 17,069,453 |
| 1850 | 23,191,876 |
| 1860 | 31,443,321 |
| 1870 | 38,558,371 |
| 1880 | 50,155,783 |
| 1890 | 64,500,000 |

The last figure given is the preliminary estimate just made by Robert P. Porter, Superintendent of the Census, on the basis of the returns thus far received. In other words our population in one century has been multiplied by more than 16. Phenomenal as has been this growth, it should be noted that during the last ten years the number of inhabitants in this country has increased by 28.6 per cent. If this rate of increase is maintained our population will reach 83,000,000 souls in 1900 and 100,000,000 inhabitants in 1906. Few will question that in 1910 we are certain to attain that figure unless causes as yet unforeseen arrest our development.

### Excellent Basic Work.

The Witkowitz mill, in Moravia, has been doing some excellent work recently, in their manufacture of basic steel, which deserves particular attention in this country since it is in the lines proposed for some of the Southern plants. During the past few months the Witkowitz mills have been making 15 to 18 charges in their magnesia lined furnaces per 24 hours, the average being 17 charges. The consumption of fuel has only been 10 to 12 per cent. of the weight of ingots produced. This record, not hitherto obtained elsewhere, has been marked by operating in the following manner, for the details of which we are indebted to Dr. Leo, of Coblenz, Germany: The pig iron, which constitutes 90 per cent. of the charge, is taken direct from the blast furnace. The dangers incident to the irregularity in the silicon and manganese contents of the iron must be avoided, however. This danger is greater than usual at Witkowitz, since the furnace has been running for 12 years, and the lining is worn. It is desirable, too, that the silicon contents of the iron be reduced because it works better in the open hearth. In order to obtain these results the Witkowitz works allow the iron to flow from the blast furnace into a Bessemer converter, preheated, so that the iron does not lose too much heat. This flowing into the converter is utilized to blow the iron for a few minutes. The iron thus partially blown is run into the open hearth furnace, and converted into steel by the addition of 10 per cent. of scrap, a suitable amount of ore and the necessary quantity of lime to eliminate the phosphorus. The iron as it comes from the blast furnace at Witkowitz carries 0.95 per cent. of silicon, 1.77 of manganese and 3.39 of carbon. After two minutes' blowing the iron going to the open hearth carried 0.26 of silicon, 0.75 of manganese and 3.03 of carbon.

In those sections where the supply of scrap is limited and pig iron suitable in composition is cheap, a process like that at Witkowitz possesses important advantages. Whether much is gained by direct pouring from the converter into the open hearth furnace is doubtful. We have been informed that this method is secured by patents in this country, while there would be no similar obstacle to the application of the combined method provided the partly blown steel is cast into ingots and transferred in that form into the open hearth furnace.

## CORRESPONDENCE.

#### Ontario Iron Ores.

*To the Editor:* As I have given considerable attention to Canadian iron ores, perhaps you will allow me to make a few remarks suggested by your recent article on "Ironmaking in Ontario." My own observations lead me to agree with you that little can be done, under present circumstances, to manufacture our own iron and steel in Canada. A few blast furnaces well situated might succeed, but the output would be comparatively small and would not amount to much. Our population is too small and too scattered to warrant the erection of large iron works. High protection and government bounties will not create a market nor make customers, and it is the market and the customers we want. But if we had free access to the whole American market there are many places where iron and steel could be profitably manufactured.

In Nova Scotia, on the Atlantic Coast, and British Columbia, on the Pacific, iron ores are found in large quantities and considerable variety in close proximity to coal. In Ontario, although we have no coal, we have rich magnetites and hematites in well wooded parts of the country where charcoal is cheap. Charcoal furnaces would have as good a chance to succeed in many of these districts as on any part of the continent if the whole continental market were open to them. Rich ores from the Northeastern part of Ontario could be delivered to Toronto very cheapily, and Connellsville coke would not cost more than in Chicago if there were no duties. You seem to doubt that Ontario possesses good ores and certainly some American ironmasters have had an unfortunate experience in this country, a good deal of which must be attributed to dishonesty and some quarrels among the owners of the mines. At any rate the ore deposits that have been tried compose a very small proportion of the iron ore mines of Ontario. I am in possession of at least 100 samples of iron ore from different parts of the Province, about two-thirds of which are magnetites and the rest hematites, both red and brown, some of which are in undoubtly large quantiti es and of great purity. Many of the magnetities are very low in phosphorus, one large deposit within about 100 miles of Toronto giving metallic iron 68 %, phosphorus from .002 to .01, with only traces of sulphur and no titanium.

As evidence of the opinion of your own iron men as to some of our ores, let me quote the testimony of W. J. Rattle, M.E. and metallurgist of Cleveland, Ohio, an expert of high standing, given before the Ontario Mining Commission, as follows:

"There is no question that they have the true formation for ore bearing rocks in Darling Township. We found specular ore in several places on the range, in one place a vein of magnetite 35 feet in width, in another hematite 15 feet. I should judge it was a very good quality of ore."

In another part of his evidence Mr. Rattle says: "I am very well satisfied with the outlook in this country [Eastern Ontario]. I judge the ores to be of good quality and think the prospects are such as would justify reasonable development. That applies to both magnetite and hematite ores. There are five distinct hematite ranges of the red specular variety. We were on three magnetite ranges, one of which had a great deal of sulphur, the others had not."

Again Mr. Rattle says: "I believe you have a magnificent outlook for iron. I am of the opinion that where the limestone predominates the sulphur and titanium disappear, but where deposits are strong in iron there is apt to be sulphur, titanium and phosphorus. I think these Ontario ores would be easy to smelt, as much so as our ores from Lake Superior. The ores here carry lime largely and you would require very little flux. You have ample supplies of ores here to make the best quality of steel rails and in sufficent quantities to start a blast furnace."

It must be remembered that Mr. Rattle's observations only extended over parts of one or two counties, and that there are at least a dozen counties of Ontario which contain iron ores, the districts of Algoma and Thunder Bay each of them extending for several hundred miles. So that it is exceedingly unfair to condemn all Ontario ores because some mines in one or two districts have proved unsatisfactory. Did space permit I could give you facts and figures to prove that we have many large deposits of valuable ores.

Yours, &c.,

T. D. LEDYARD.

TORONTO, June 27, 1890.

### The Iron Car Company.

Creditors of the Iron Car Company, of No. 120 Broadway, which failed about six weeks ago, are gratified over the announcement that the company will be reorganized and placed on a sound financial basis. A syndicate composed of Brown Bros. & Co., Post, Martin & Co., and other bankers have, it is said, taken hold of the reorganization, and will put $600,000 capital in the new company. The creditors are to be paid in full, partly by notes of the reorganized company and partly by 6 per cent. bonds of the new company. The reorganization is being carried out by a committee consisting of Col. Post, of Post, Martin & Co.; Conrad N. Jordan, Paul H. Cravath, of Carter, Hughes & Cravath, and Haley Fiske, of Arnoux, Rich & Woodford. These creditors who hold the joint obligations of the Iron Car Company and the Minnesota Iron Car Company will have their notes and bonds guaranteed by the Minnesota Company.

Suits aggregating $477,500 have been begun in Chicago against Nathan Corwith, Jr., as a result of the young man's disastrous attempt to corner the lead market. The actions are brought to get the claims to judgment, in hopes that assets may yet be developed to pay some part of them. The claimants are James M. Ryan, James H. Swinarton, Everet & Port, St. Joseph Lead Company, Aurora Smelting and Refining Company, the Doe Run Lead Company and the Pennsylvania Lead Company.

G. Wyckoff Cummins, of 531 Fifth avenue, New York, has published a small pamphlet on the annealing of copper. He aims to show the cause of the difficulties now experienced in annealing copper without burning it, and alludes to the advantages of the Cummins process of producing bright, annealed copper in an atmosphere of steam.

# The Boiler Makers' Convention.

The third convention of the American Boiler Manufacturers' Association is now being held at the Park Avenue Hotel, New York. Judging from the large attendance now present, the value of the reports presented and to be presented, and the keen interest taken by each one in the proceedings, it is believed that the present meeting will result in the adoption of measures tending to most decidedly advance the boiler in design, construction and material. On Tuesday, the opening day of the session, the following members were in attendance:

A. T. Douthett, Allegheny City, Pa.
J. C. Porter, Allegheny City, Pa.
Philip Rohan, St. Louis, Mo.
W. J. Burrowes, St. Louis, Mo.
J. R. Brownell, Dayton, Ohio.
R. Hammond, Buffalo, N. Y.
R. Garstang, St. Louis, Mo.
T. R. Williams, Pittsburgh, Pa.
W. P. Loughry, New York.
James Lappan, Pittsburgh, Pa.
A. Wasserman, Philadelphia, Pa.
Robert H. Connery, Philadelphia, Pa.
S. L. Larned, Buffalo, N. Y.
George E. Rily, Pittsburgh, Pa.
W. E. Park, Pittsburgh, Pa.
Chas. Harnelman, Buffalo, N. Y.
C. Murphy, Chicago, Ill.
John Mohr, Chicago, Ill.
William Mohr, Chicago, Ill.
Henry Brabst, Grand Rapids, Mich.
J. Mathews, South Bend, Ind.
Thos. Johnston, Ferrysburg, Mich.
G. C. McGregor, Chicago, Ill.
Joseph Bee, Chicago, Ill.
John Homler, Chicago, Ill.
Joseph Bronrich, Topeka, Kan.
T. E. Davis, Ludington, Mich.
E. W. Hopkins, Bryn Mawr, Pa.
James M. Farr, New York.
Millard Hunsicker, Pittsburgh, Pa.
G. H. Masgrave, Boston, Mass.
George Geny, Hartford, Conn.
J. C Stewart, Worcester, Mass.
John J. Burke, Pittsburgh, Pa.
George Miles, Boston, Mass.
W. A. Hennessey, Springfield, Mass.
John T. Norton, Troy, N. Y.
A. M. Castle, Chicago, Ill.
D. Grupe, Davenport, Iowa.
A. H. Raynal, Richmond, Va.
Edward Kendall, Cambridge, Mass.
J. H. Kendall, Cambridge, Mass.
D. A. Wightman, Pittsburgh, Pa.
John MacCormack, Albany, N. Y.

President James Lappan, in his opening address, said that while much work had been done at the Pittsburgh convention, held last year, there still remained features in the construction, design and material of the boiler which would demand close and conscientious attention, and further, that in order to accomplish the best results it would be necessary to unite the efforts of all the members of the association and by working in harmony to produce standards of excellence which would be recognized throughout the country, and which would inspire confidence on the part of the user of the steam boiler. It is, in order to attain the best results possible, necessary to watch closely, first, the design of the boilers, next to carefully watch and conscientiously inspect the material of which that boiler is to be made, and third, to provide some method by means of which only first-class workmanship will be permitted. These points the association hopes to cover, and from the work already done it may be expected that more complete and perfect attainments may be looked for in the near future.

The report of the secretary, A. T. Douthett, showed that there were at present 128 members, composed of the leading boiler makers of the country, of whom 123 had paid in full what we may term the initiation fee of $25, the total income for the past year being some $3300, and the amount now available in the treasury being about $400. The secretary further said that a circular had been sent to all the members in order to ascertain the opinion in regard to forming the American Boiler Manufacturers' Insurance Company. The replies received had favored the inauguration of such a project. As there are now only two important boiler insurance companies, it was the opinion that there was room for a third one in which the boiler makers themselves would be directly interested. This would be an admirable move, it was so considered, because all makers of boilers would be on the alert to accomplish good work and especially to conform with the specifications concerning design and material drawn or to be drawn up by the association.

After this followed the reading of the minutes of the last meeting, held in Pittsburgh in October, 1889.

The secretary also stated that he had written in the name of the association to the Secretary of the Treasury, suggesting that certain supervisors of steam vessels be designated to attend the meeting, in order that they might confer with the committees appointed, and in order that the benefit of their knowledge regarding existing regulations and their extended experience with all types of boilers might be placed at the disposal of the convention. In reply to this it was stated that Gen. J. A. Dumont, supervising inspecting general of steam boilers, Geo. H. Starbuck, supervising inspector of the second district of New York and Alexander McMaster, supervising inspector of the Ninth District of New York, were designated to attend the convention. These gentlemen were all present, and through General Dumont expressed their willingness to assist in every way in their power to further the interest and add to the value of the meeting.

The first report presented was from the Committee on Manheads and Manholes. Joseph F. Wangler, chairman. This report was as follows: "Manholes should be made of cast metal of proper thickness and size for the purpose intended. Manholes, when practicable, should be inserted in the boiler heads and the boiler heads should be properly reinforced by wrought metal containing not less than one-third more square inches of area than the opening that is cut out." In the discussion following the presentation of this report, Mr. Mitchell presented objections because the report was not signed by all the members of the committee.

Mr. Lappan explained that the object aimed at by this committee was to secure uniformity in man and hand hole plates, so that if necessary a plate could be bought in any part of the country which would be sure to fit the opening.

Mr. Raynal indorsed Mr. Mitchell's views, and offered the resolution that the committee be discharged and another appointed, as the present committee had failed to cover the subject. The secretary then read the report of the same committee presented at the Pittsburgh meeting. The new committee, and which is to report at the present meeting, consists of Messrs. Raynal, Mitchell and Matthews, who will be assisted to the full extent of their power by the Government inspectors.

The next report on safety valves and horse-power was not ready, but will be presented at some later meeting of the convention. The report of the Committee on Uniformity in State Inspection Laws was not ready.

George Marshall, of Akron, Ohio, said that he had studied this subject to a certain extent, and in his investigations had written to the secretary of every State and Territory, and out of 27 replies received he found that only three States had inspection laws in force, and that except in the case of Colorado these laws were practically invalid. They are badly needed. The association might memorialize Congress to put the inspection of steam boilers in the hands of the Government, the same as is now the case with marine boilers. A man traveling upon a vessel feels reasonably safe from any harm that might arise from boiler explosion, owing to the efficiency of the department having charge of the inspection; but he found it was impossible to determine the condition of any boiler, from the simple fact that except in isolated cases no one was responsible for its state. By placing it in the hands of a Government inspection board it would be removed completely from politics and would be in the hands of those absolutely independent of any party feeling.

It was stated that the Government was not authorized to interfere in the control of State matters, and that it would be necessary, therefore, to memorialize the several State legislatures, and that all the work that could be done by the association would be to draw up a uniform State inspection law and present it to the several legislatures and depend upon them to have it enacted.

Mr. Dunden, of San Francisco, stated that only recently in that city the Board of Supervisors were petitioned by the stationary engineers to draw up a law for the city and county, governing the inspection of steam boilers, but it was found that the State laws prevented it. The matter is now before the courts to decide the question as to whether they can legally appoint one or more inspectors, as may be necessary to examine and report upon the boilers. He was also of the opinion that all that would be possible would be to recommend certain legislation.

Mr. Mitchell thought that the only course was through Congress, and that by all the boiler makers moving along the line a pressure could be brought which would insure proper legislation.

Mr. Hammond called attention to the fact that all the association aims at is uniformity in the laws to be adopted by the several States.

Mr. Raynal said that while he was not lawyer enough to know absolutely, he felt assured that there was a way in which Congress could do the work desired. He instanced the fact that the Interstate Commerce law was now in force, and that it would be possible to bring the Boiler Inspection law under the same ruling. It was preposterous to think that a man in one State could send a boiler, which might in reality equal in its effect dynamite, into another State that might be disastrous to its inhabitants. He further said that he had seen the letters above referred to, and that the secretary of one State had sent back word, "Send me $7, and I will answer." The committee appointed by the president to consider this question was composed as follows: Messrs. Marshall, Dunden, Raynal, Lovegrove, Cunningham, Hopkins and Connery. Before adjourning the president stated that E. A. Magee, Chief Engineer United States Navy, in charge of the Brooklyn Navy Yard, had kindly invited the members to visit the yard at their own pleasure and inspect the various work there now carried on. It was decided to defer consideration of this subject until a later session.

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The iron molders' strike in San Francisco has lasted over three months, and from the start was ill advised. The union, so it is stated by a correspondent, adopted a rule that molders should make only a certain number of castings per day, and this limit was the average of the poorest men. The union also declared that there should be only one apprentice to eight molders. With this was involved the eight-hour question, but the strike was primarily due to the apprentice question and the device to grade all work by the standard of the slowest mechanics. The foundrymen swore they would not submit to such demands, and so the fight

began. The Union Iron Works is the leader among the foundries, and Manager Scott began importing molders from the East. These non-union men have been shamefully used in many cases, and about half were induced by threats to desert to the ranks of the strikers. The strike is a fine example of the misuse of the power of a union to reduce a good workman to the level of the inefficient.

### The Pittsburgh Iron and Steel Engineering Company.

The above concern was granted a charter on the 19th ult. with a capital stock of $100,000. Under date of the 20th ult. the following announcement was issued to the trade: "Recognizing the growing desire of many manufacturers and capitalists to be able to contract outright for the erection of all classes of iron and steel work, structural work, &c., thereby relieving themselves of the necessity of being familiar with the many and various details involved; believing also that there is a growing tendency toward contracting for various enterprises as an entirety, and that the day is past when every manufacturer is his own engineer, we have formed the Pittsburgh Iron and Steel Engineering Company. The primary object of the company is to contract for work in its entirety, iron structural work, machinery of all descriptions, masonry, brickwork, foundations, freights, erection and all nature of superintendence. Incidentally the company will give estimates, make plans and surveys upon contemplated work, acting in an engineering capacity to those who do not support an engineering staff of their own. Supported by the largest and best equipped structural and boiler works foundry and machine works in the country having available its plans, estimates and data of many years' accumulation. Supported by a well trained and tried set of workmen in iron, steel, brick and masonry work, centrally located with all possible railroad facilities, we have confidence in our ability to carry out any work that may be intrusted to us satisfactorily and successfully." The incorporators of the new company are: James Hemphill and Pennock Hart, of Mackintosh, Hemphill & Co.; Thos. B. Riter and Wm. H. Conley, of Riter & Conley, and John F. Wilcox. The following officers have been elected: James Hemphill, president; Wm. H. Conley, treasurer, and John F. Wilcox, secretary and general manager. The offices of the company are located in Rooms 512 and 513, Lewis Block, Pittsburgh, Pa.

The number of failures reported in the United States during the first half of 1890 were, according to *Bradstreet's* 5466, against 5918 corresponding period last year, a decrease of 452. In Canada there were 869, against 872, a decrease of 3. The aggregate assets (United States) were $30,005,126 and liabilities $62,667,960, against $32,803,940 and $67,411,711 last year. In Canada the assets were $3,614,172 and liabilities $7,224,903, against $3,404,613 and $7,283,572 last year. The following table gives an analysis of the failures by divisions of States, with particulars for New York City also:

| | No. of failures. | | Actual assets. (000's omitted) | | Actual liabilities. (000's omitted) | |
|---|---|---|---|---|---|---|
| States. | 1890. | 1889. | 1890. | 1889. | 1890. | 1889. |
| Eastern.... | 849 | 884 | $3,012 | $8,957 | $7,489 | $20,618 |
| Middle.....1,458 | | 1,384 | 11,037 | 8,750 | 26,787 | 17,575 |
| Southern.. | 825 | 985 | 4,062 | 3,531 | 7,231 | 6,853 |
| Western...1,252 | | 1,419 | 7,263 | 6,933 | 13,109 | 14,282 |
| Northwestern..... | 537 | 701 | 2,402 | 2,983 | 4,270 | 4,969 |
| Pacific..... | 504 | 486 | 2,099 | 1,361 | 3,754 | 2,613 |
| Territories. | 41 | 59 | 147 | 270 | 223 | 488 |
| Totals..5,466 | | 5,918 | $30,022 | $32,803 | $62,463 | $67,408 |
| New York City..... | 306 | 303 | 3,814 | 2,026 | 8,575 | 4,691 |

## EASTERN MISCELLANY.

Colonel Pope, of Boston, the bycicle manufacturer, has become the owner of the Weed Sewing Machine Company, of Hartford, Conn., of whose stock he formerly owned one-third. He has bought out every other stockholder in the company.

The Twist Drill Works, at Taunton, Mass., are running night and day, and the Taunton Iron Works are also running on full time.

The iron foundry at Houlton, Maine, destroyed by fire a short time ago, is being rapidly rebuilt. The old ruins have been cleared away and the foundry building is now receiving its roof. This is 40 x 50 feet in extent. The new machine shop will be 40 x 75 feet. The buildings will be one story in hight, strongly framed and well lighted. The woodworking department will occupy the north end of the shop.

Ex-Senator E. D. Jones has purchased the extensive foundry and machine works of William Clark & Co., at Pittsfield, Mass., in which he has been a partner for many years, for $30,000. He will take as partners his sons, H. E. and E. A. Jones and Walter Noble.

Belfast, Maine, now boasts of an electric grist mill on one of its wharves, the power being delivered by a 39 horse-power Thomson-Houston motor. The mill is equipped with a set of stones and one roller mill, and can turn out from 300 to 400 bushels of meal per day.

The Holyoke Machine Company's branch establishment in Worcester does a large business. The Holyoke shops manufacture paper machinery entirely. The Worcester branch is engaged chiefly in the making of water wheels. Important alterations and additions have been made in this branch lately. They have built an addition to the foundry 100 x 60 feet, an addition one-half the size of the main foundry. The Worcester branch is doing a great deal of heavy work at the present time. They have recently sent some wheels to the Washburn mills in Minneapolis, the largest flour mills in the world. They have equipped the electric railway stations in New Orleans, Indianapolis and Waltham, and only a short time ago finished equipping the Worcester Electric Light Station.

E. W. Rice, Jr., of the Thomson-Houston Company, has just patented a new method of measuring electric currents which is novel and interesting He does it by heating two expansible rods, bars or pieces of solid material by the agency of an electric current flowing alternately in two circuits, automatically switching the current from one branch to another by the movement of the expansible bars as they alternately heat or cool, and registering or counting the number of movements of expansion and contraction. An invention which marks a new discovery in the fields of electrical science has recently been patented by Prof. Elihu Thomson. It is for an alternating current magnetic device to produce from the same alternating current circuit coil or alternating inductive field or source, an effect in which there shall be two more sets of alternations dependent upon changes in phase, and includes a particular way of disposing of the closed circuit retarder or lagging device. He has also just patented a system of electrical distribution, which is a combination of his compensator system with the transformer system, so that a high potential—1000 volts, more or less—may be carried any distance and reduced to a much smaller voltage, effecting a great saving in copper. C. J. Vandepoele, the electrician whose railway inventions are controlled by the company, has for two years been working on an entirely new principle in electric mining machinery, and has developed his apparatus so that most of the inventions are already covered by patents, and application has been made for others. The new factory will be used for the manufacture of these electric drills and other devices, which those able to judge consider as only second in importance to the railroad work.

The new State of Wyoming has exhaustless resources in coal, oil and salt. On the line of the Union Pacific Railroad 1,500,000 tons are mined yearly. At Mount Zion a company are spending $2,500,000 in getting ready to ship coal when the railroad reaches that point. Numerous oil wells already bored have been closed with valves to await transportation. The largest known deposit of salt covers 160 acres. It appears from measurements that they will yield over 30,000,000 cubic feet of salt for each foot in depth. These wonderful lakes are fed by salt springs. The only use yet made of the deposits is at Laramie, where there are chemical works, glass works and soap works drawing supplies from the lakes.

### The Western Scale.

Some little opposition was manifested by the iron manufacturers at Pittsburgh against the new wage scale of the Amalgamated Iron and Steel Workers' Association, which was presented to them for signature last week. It is understood that this opposition was directed mainly against some of the extras that have been introduced in the scale. Under the scale for boiling there were two clauses added, which read as follows:

2. In order to insure uniformity of iron in boiling furnaces, and avoid the increasing custom of running in strong for common iron, thus increasing the hours and work of the boiler, the limit of time for each heat shall be as follows: For a single furnace, one hour and 45 minutes; for a double furnace, one hour and 50 minutes, and for a double double furnace, two hours.

3. Where it is shown that five or more boiling furnaces in a mill take more time than specified in clause 2 to make a heat, 50 cents per ton extra shall be paid for all such iron worked.

In addition to the above several other conditions called for were objected to by the manufacturers, and it was deemed advisable to appoint a conference committee to meet a similar committee from the Amalgamated Association. This conference ended satisfactorily, and the scale of wages adopted at the recent convention was signed by the masters. It was the qualifying clauses to the scales which created a dissatisfaction on the part of the manufacturers, but these were either withdrawn or satisfactorily explained and the scale signed. Work will now continue for another year without interruption at all the mills in the country. A few plants will close down for repairs during July and August, but in September there will be a general resumption.

The Mason Regulator Company, of Boston, have recently invented, and will soon place on the market, a device whereby the whistle of a factory is blown whenever anything occurs to the fire sprinkler service, either in case a fire breaks out or one of the sprinklers is blown out, which latter accident may endanger the stock in the factory. By a simple device, which is placed in the water service pipe whenever the pressure is lessened from any cause, steam is allowed access to either the whistle or any other automatic form of alarm. In several instances where this device has been used it has saved more than its cost by notifying the watchman that there was something the matter with the sprinkler system.

The Niagara Stamping and Tool Company, of Buffalo, are compelled to enlarge their plant by the addition of a foundry, 50 x 80 floor space, equipped with all the latest and most improved devices for supplying the large amount of castings that they annually use. They inform us that during the last few months they have received an unprecedently large number of orders for squaring shears of all descriptions, chiefly, however, of the heavy variety, such as are used for heavy sheet metal rolling mills, &c.

The Columbia Rolling Mill Company, of Jersey City, N. J., desire to obtain the name of a manufacturer of a machine capable of tinning Taggers iron of No. 34, 36 and 38 gauge. It is specified that the tin must come out of the bath clear and without any lumps on the sheets.

# TRADE REPORT.

## Philadelphia.

Office of *The Iron Age*, 220 South Fourth St. | PHILADELPHIA, Pa., July 1, 1890. |

The close of the first half of the year shows quite a falling off in prices, notwithstanding the fact that consumption has been very heavy, probably as large as any on record, with the exception of the last half of 1889. The tendency of prices, however, is again toward a higher level, and it is not unlikely that the close of the current year may see quotations pretty much as they were at the close of 1889. It is true that a good many new furnaces will be ready to start up within the next three or four months, and, while they may check any strong tendency toward an advance, the demand is likely to be such as to enable sellers to secure some advantages not now obtainable. Compared with prices six months ago, we find the declines to be as follows:

| | |
|---|---|
| Foundry Irons, ℔ ton | $2.00 |
| Mill Irons, ℔ ton | 2.50 |
| Muck Bars, ℔ ton | 3.00 |
| Steel Billets, ℔ ton | 4.00 |
| Steel Rails, ℔ ton | $3.00 @ 4.00 |
| Bar Iron, ℔ 100 ℔ | 15¢ @ 20¢ |
| Tank Plates | 15¢ @ 20¢ |
| Angles | 10¢ @ 15¢ |

The demand is very heavy, however, and from present indications there is reason to believe that the balance of the year will be one of great activity in the Iron trade.

**Pig Iron.**—The market shows a fair degree of firmness, notwithstanding the fact that a good deal of realizing has been done during the past couple of weeks. Sales were recently made as low as $15, delivered, for good mill Irons, but there is nothing of that kind available to-day. There are bids at that figure for large lots, sellers asking about 50¢ more, with considerable business reported at from $15.25 @ 15.50. Foundry Irons show no change whatever, the majority of sales being at $18 @ $18.50, delivered, for the best Irons, and from that down to $17, and $17.50 for brands less favorably known. The general indications, therefore, are in sellers' favor, as there is a better demand, and the changes, such as they are, are all toward somewhat higher prices. The offerings of Iron are not out of proportion to the demand, so that with any increase in consumers' requirements prices would easily respond, but in the meantime neither sellers nor buyers seem inclined to abandon their method of limiting operations to 30 or 60-day contracts.

**Muck Bars.**—Prices are firmer, the usual asking figure being $29 at mill. Sales so far as known have not been at over $28.50, but with indications of an active demand, and only limited offerings, holders are firm at the advance named.

**Steel Slabs and Billets.**—The market is very firm, and orders hard to place for any delivery this side of September. Prices are irregular according to condition of order book at the various mills, but $32 @ $32.50, delivered, for Nail Slabs would probably be a fair quotation, and $33 @ $34 for 4 x 4 billets, although some mills are declining business at these figures.

**Steel Rails.**—The demand for small lots keeps up very fairly, but large orders are not offered to any extent. Mills are full of work, nevertheless, the demand for Billets and Blooms being a good offset to any paucity in the retail trade. Prices are steady at from $31.50 to $32 at mills for small lots, and about $31 for orders of 5000 tons and upward.

**Bar Iron.**—The demand is improving, and mills are well supplied with orders, but no advance in prices has been found practicable so far. There is a firmer tone, however, and 1.80¢ is considered a very inside figure, 1.85¢ to 1.90¢ being the ruling rates for the general run of orders. The mills will shut down on Thursday, and in many cases will not resume work until July 14, so that consumers likely to need Iron have been sending in their orders pretty freely within the past week or two. A good demand is expected during the fall months, and it is not unlikely that a slight advance will be asked for August deliveries and later.

**Skelp Iron.**—Not much new business offering at present. Sellers quote 1.75¢, delivered, for Grooved and 1.95¢ @ 2¢ for Sheared, but customers are inclined to hold off for the present.

**Plates.**—Mills are very full of work, but no quotable advance in prices has been established. Concessions are not as general as they were some time ago, however, so that business is usually at full quoted rates. Sellers are a little cautious in naming prices on large lots, as there is a probability of higher figures as soon as the demand sets in again. Meanwhile business is usually at about the following rates for lots delivered in consumers' yards:

| | Iron. | Steel. |
|---|---|---|
| Ship Plates | 2.10 @ 2.15¢ | 2.20 @ 2.40¢ |
| Tank | 2.10 @ 2.15¢ | 2.25 @ 2.45¢ |
| Bridge Plate | 2.15 @ 2.20¢ | 2.40 @ 2.50¢ |
| Shell | 2.40 @ 2.50¢ | 2.60 @ 2.70¢ |
| Flange | 3.00 @ 3.15¢ | 2.80 @ 3.00¢ |
| Fire-Box | 3.75¢ | 3.75 @ 4.25¢ |

**Structural Material.**—Business continues very satisfactory to manufacturers who have their mills fully employed. New work comes in as rapidly as it can be handled, and prospects for the balance of the year are unusually bright. Prices are firm at the figures ruling for some time past, viz: 2.20¢ @ 2.25¢, delivered, for Sheared Plates; 2.15¢ @ 2.20¢ for Angles, with 10¢ @ 20¢ more for the same in Steel. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

**Sheet Iron.**—There is an excellent demand, especially for thin sheets, which can hardly be turned out as fast as required. Prices are steady and for carload lots are quoted as follows:

| | |
|---|---|
| Best Refined, Nos. 14 to 20 | 3.00¢ @ 3.10¢ |
| Best Refined, Nos. 21 to 24 | 3.20¢ @ 3.30¢ |
| Best Refined, Nos. 25 to 26 | 3.40¢ @ 3.50¢ |
| Best Refined, No. 27 | 3.50¢ @ 3.60¢ |
| Best Refined, No. 28 | 3.60¢ @ 3.70¢ |
| Common, ¼¢ less than the above. | |
| Best Soft Steel, Nos. 14 to 20 | 3¼¢ @ 3¼¢ |
| Best Soft Steel, Nos. 21 to 24 | 3¾¢ @ 3¾¢ |
| Best Soft Steel, Nos. 25 to 26 | 3¾¢ @ 3¾¢ |
| Best Soft Steel, No. 27 | 4¢ @ 4¼¢ |
| Best Bloom Sheets, 1-10¢ extra over the above prices. | |
| Best Bloom, Galvanized, discount | 60 % |
| Common, discount | 62½ % |

**Old Rails.**—Scarce and in demand. Sales have been made at $25.75, delivered at mills near by, and $25 is bid for Philadelphia deliveries, or $25.50 Harrisburg. There are very few sellers, however, and in most cases holders ask 50¢ to $1 above the figures named.

**Scrap Iron.**—The demand is quite active and sales are easily made at outside figures for good quality, as follows: No. 1 Wrought, $21.50 @ $22 Philadelphia, or for deliveries at mills in the interior, $22 @ $23; $16 @ $17 for best Machinery Scrap, $15 @ $15.50 for ordinary, $15.50 @ $16.50 for Wrought Turnings, $11 @ $11.50 for Cast Borings, $25 @ $27 for Old Fish Plates, and $17 @ $18 for Old Car Wheels.

**Wrought Iron Pipe.**—Mills are running to their full capacity, with plenty of orders ahead. But still there is a general scarcity in sizes below 1¼ inches, the demand being especially urgent. Holders of the smaller sizes are firm at their own prices. There is also a scarcity reported in very large sizes. Discounts as follows: Butt-Welded Black, 47½ %; Butt-Welded Galvanized, 40 %; Lap-Welded Galvanized, 47½ %; Lap-Welded Black, 60 %; Boiler Tubes, 1¼ inches and smaller, 45 %; Boiler Tubes, 2 to 4 inches, 50 %; Boiler Tubes, 4½ inches and larger, 52½ %; Oil Well Casing, 50 %.

## Pittsburgh.

Office of *The Iron Age*, Hamilton Building, | PITTSBURGH, July 1, 1890. |

**Pig Iron.**—The market continues quiet. With a reduced demand an easier feeling is to be expected, but there is nothing in the situation either present or prospective to indicate weakness. As soon as consumers get through with stock taking and making repairs they will start up again, and then they will all want some Pig Iron. It is but proper to state that while the demand at present is light there is but little Iron offering, and as furnacemen both here and in the Shenango Valley are pretty well sold up, some of them having contracts that will absorb their production for from one to six months, they are just about as independent as consumers. Prices as compared with those of last week are without quotable change, although it is possible that for immediate delivery some lots might be picked up at a slight reduction, or, say, $19.25, possibly $19, but so far as we can learn there have been few actual sales of late under $19.50. Standard Forge Irons are to be had at $15.50, cash, although some furnaces refuse to sell under $15.75. Foundry Irons continue neglected, but an improved demand is looked for next month. We quote prices as follows:

| | | |
|---|---|---|
| Neutral Gray Forge | $15.25 @ | $15.75, cash. |
| All Ore Mill | 16.50 @ | 17.00, " |
| No. 1 Foundry | 17.50 @ | 18.00, " |
| No. 2 Foundry | 16.25 @ | 16.75, " |
| No. 3 Foundry | 16.00 @ | 16.25, " |
| No. 2 Charcoal Foundry | 22.00 @ | 22.50, " |
| Coal Blast Charcoal | 26.00 @ | 30.00, " |
| Bessemer Pig | 19.00 @ | 19.50, " |

**Muck Bar.**—There does not appear to be much inquiry, but there is so little difference between Muck and Old Iron Rails that increased demand for the former is looked for at the expense of the latter. We continue to quote at $29 @ $29.50, cash, although it is intimated in some quarters that it can be bought from 25¢ to 50¢ below our lowest quotations.

**Manganese.**—Domestic, 80 %. Ferro is quoted at $77 @ $78 for small lots for immediate delivery. Foreign, 80 %, is being offered at $75 at seaboard, although it is intimated that for a large block for forward delivery it might be laid down in Pittsburgh at the price last quoted.

**Manufactured Iron.**—The demand is not very active at present, but an improvement is looked for early next month. No change in prices. Bars, 1.80¢ @ 1.85¢, 60 days, 2 % off for cash, for first quality stock; Tank and Plate Iron, 2.15¢ @ 2.20¢; Skelp, 1.80¢ @ 1.85¢ for Grooved and 2.10¢ @ 2.15¢ for Sheared. Those mills making a specialty of the latter have had about all they could do of late, and the outlook indicates that this will continue to be the case.

**Nails.**—Steel Cut Nails are quoted a $2 here, 60 days, 2 % off for cash, while at Wheeling, according to our latest reports from that point, $1.90 was the price there. The advanced price has curtailed the demand somewhat, as jobbers are holding back to ascertain whether or not the advance is likely to be maintained. Wire Nails are quoted at $2.25, 60 days, 2 % off for cash. Some manufacturers report that they are not disposed to push trade at present prices.

**Steel Plates.**—While there has not been much new business of late, mills are pretty well employed on contracts made some time ago. No change in prices. Fire Box, 4¼¢ @ 4¾¢; Shell, 3¢; Flange, 3.15¢ @ 3.20¢; Tank, 2.75¢.

**Structural Iron.**—There is a fair demand but no change in prices. It is expected that there will be a considerably improved business next month. Angles, 2.25¢; Channels and Beams, 3.10¢; Sheared Bridge Plates, 2.75¢; Universal Mill Plates, 2.40¢; Refined Bars, 1.90¢ @ 2¢.

**Merchant Steel.**—For this there is a fair demand, all possibly that can reasonably be expected at this particular time, just at the close of the first half of the year. Prices remain unchanged. Tool Steel, 8¢ and upward as to quality and brand; Crucible Spring Steel, 4¢; Open Hearth Steel, base sizes, 2¼¢; Bessemer Machinery Steel, 2.35¢; Tire Steel, 2.50¢ @ 2.60¢.

**Wire Rods.**—There is considerable inquiry, and none of the mills here are in position to take additional contracts. A broker, having an order for 500 tons for July and August, says that he has, as yet, been unable to place it. In the absence of any recent sales it is difficult to quote accurately, but for the delivery named $43 would be readily obtained.

**Billets and Slabs.**—There is considerable inquiry, and prices remain about as last quoted—$30.50 @ $31, cash, at makers' mill. A large sale is reported at $30.75, on cars, at Wheeling. One of the largest manufacturing firms here reports that, while asking $31, they have made no sales as yet above $30.50, and it is intimated that an offer of $30.50 for more would probably be accepted.

**Old Rails.**—Old Iron Rails continue scarce, and, while the market is firm, there have been no sales reported since last week. At prices prevailing at sources of supply West they would cost $27.50 @ $28, laid down in Pittsburgh, but consumers say that at present prices Muck Bar is much the cheapest, and this will no doubt affect the demand for Rails. It is said that Mahoning valley mills are bidding $27, delivered at their mills, but that sellers at that price cannot be found. It is reported that the Chicago and Milwaukee Railroad still have a good many Iron Rails to take up, but that they are not very anxious to sell. Old Steel Rails are also in scant supply and hard to get; may be quoted in the absence of sales at $21 @ $21 50 for short and $22 @ $22.50 for long pieces.

**Wrought Iron Pipe.**—There is nothing particularly new to note in connection with this important branch of the Iron business. Mills are reported busy, and the indications are that this will continue to be the case for some time to come. No change in prices.

**Steel Rails.**—There is considerable inquiry and there would be no difficulty in effecting sales if the mills here were not well sold up; the trouble is they are unable to make the deliveries desired. We now quote at $32 @ $33, cash, at mill, according to delivery and character of contract. So far as we can learn but few sales have been made here under $31, and that was some time ago when the mills were more anxious for business than they are at present.

**Railway Track Supplies.**—Business fair; prices unchanged. Spikes $2.15, 30 days, on cars at works and $2.25 delivered at Chicago and St. Louis.

**Old Material.**—The demand for all kinds of old material continues light, while prices remain unchanged. No. 1 Wrought (Railroad Shop Scrap), $20.50 @ $21.25, net ton; Cast Scrap, $15 @ $15.50, gross; Old Car Wheels, $18.50 @ $19; Steel Bloom Ends, $21 @ $21.50. Several good sized sales of the latter reported within the past week at prices quoted.

**Connellsville Coke.**—There is no abatement in the demand, and prices are firm but unchanged, as follows: Blast Furnace Coke, f.o.b. at ovens, $2.15; Foundry Coke, $2.45; Crushed Coke, $2.65 ℔ ton of 2000 lb. Prices at other points are as follows:

| | Foundry Coke. | Crushed Coke. |
|---|---|---|
| On Cars at Boston and points taking Boston freight rates. | $6.45 | $6.65 |
| On cars at Baltimore | 4.62 | 4.82 |
| On cars at Buffalo | 4.70 | 4.90 |
| On cars at Cleveland | 4.15 | 4.35 |
| On cars at Cincinnati | 5.10 | 5.30 |
| On cars at Toledo | 4.80 | 5.00 |
| On cars at Detroit | 4.80 | 5.00 |
| On cars at East St. Louis | 5.65 | 5.85 |
| On cars at St. Louis | 5.80 | 6.00 |
| On cars at Chicago | 5.20 | 5.40 |
| On cars at Milwaukee | 5.30 | 5.50 |

Freight rates from the regions are as follows:

| | |
|---|---|
| To Pittsburgh | $0.70 |
| To Mahoning and Shenango valleys | 1.35 |
| To Cleveland, Ohio | 1.70 |
| To Buffalo, N. Y | 2.25 |
| To Detroit, Mich | 2.35 |
| To Cincinnati, Ohio | 2.65 |
| To Louisville, Ky | 3.20 |
| To Chicago, Ill | 2.75 |
| To Milwaukee, Wis | 2.85 |
| To St. Louis, Mo | 3.35 |
| To East St. Louis | 3.20 |
| To Baltimore | 2.17 |
| To Boston | 4.00 |

(*By Telegraph.*)

The most important matter to report is the settlement of the wage scale for another year, thereby dissipating apprehensions of a strike at present. There is very little new business in either Iron or Steel, but the wage scale having been disposed of, an improvement within the next week or two is confidently expected. Bessemer Iron reported weak. A broker says he has 10,000 tons to sell for delivery during the next two or three months at $1900 cash.

## Chicago.

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, July 2, 1890.

(*By Telegraph.*)

**Pig Iron.**—The past week has been another period of heavy business. The demand holds up remarkably for the season, but sellers appear to be anxious to secure the orders in sight, and concessions are made which disprove the theory that the market will take all the Iron now being turned out. This is particularly true of Lake Superior Charcoal. It has not kept as firm a front as was expected, but more or less giving way has occurred along the line. Heavy contracts have been placed by consumers both in the East and the West. They have not been able to work prices down to anything like the figures of last year, and makers have therefore gained an advantage in that respect. The position of the Charcoal Iron makers had been weakened somewhat by the cancellation of large orders from the Bessemer Steel people, who are understood to have paid a good bonus to be relieved. This released a much larger furnace capacity for the general trade than had been anticipated, and probably aided the slight weakness in prices referred to. No serious cuts are understood to have been made, several large contracts having been secured at close to $20. In Coke Iron numerous transactions have been closed, ranging from 100 to 1000 tons, but they were mainly secured by the local furnaces, as Southern Iron is now being held quite firmly. Quotations are as follows, cash, f.o.b. Chicago:

| | | |
|---|---|---|
| Lake Superior Charcoal | $19.50 @ | $20.50 |
| Local Coke Foundry, No. 1 | 16.50 @ | 17.00 |
| Local Coke Foundry, No. 2 | 16.00 @ | 16.50 |
| Local Coke Foundry, No. 3 | @ | 15.50 |
| Bay View Scotch | 16.50 @ | 17.00 |
| Am. Scotch (Strong Soft), No. 1 | 19.25 @ | 20.00 |
| Jackson County, Soft and Silvery, No. 1 | 18.00 @ | 18.50 |
| Southern Coke, No. 1 | 16.50 @ | ..... |
| Southern Coke, No. 2 | 16.00 @ | ..... |
| Southern Coke, No. 3 | 15.50 @ | ..... |
| Southern, No. 1, Soft | 16.00 @ | ..... |
| Southern, No. 2, Soft | 15.00 @ | ..... |
| Southern Gray Forge | 15.00 @ | ..... |
| Southern Mottled | 14.00 @ | 14.50 |
| Tennessee Charcoal, No. 1 | 19.00 @ | ..... |
| Missouri Charcoal, No. 1 | 18.50 @ | ..... |
| Alabama Car Wheel | 22.50 @ | 24.00 |

**Bar Iron.**—Heavy contracts have been placed by large consumers along the Mississippi. They are understood to have paid 1.80¢, delivered. Still large contracts are pending this week from consumers near by which will probably soon be closed. Much better prices are being realized for the makers on this season's contracts than was the case a year ago. Buyers have been holding off in the hope that prices would fall, but they have been in error. They now strike a time when the mills will very generally shut down for from two weeks to a month, and the manufacturers are quite independent with a diminished output, high raw material and a large demand for Bar Iron. It is hard to see why prices will not be well maintained. Quotations range from 1.80¢ to 1.85¢, half extras Chicago, for large mill orders, and the 1.75¢ sellers are now very few. Store prices range from 1.95¢ to 2.10¢, according to quality and quantity.

**Structural Iron.**—Structural Iron is in excellent demand, but prices are unchanged. The following quotations prevail on carload lots, f.o.b. Angles, 2.25¢; Tees, 2.65¢; Beams, 3.20¢; Universal Plates, 2.45¢; Car Truck Channels, 2.40¢ @ 2.50¢. Beams sell from store in small lots at 3.70¢, but Angles and Tees at 10¢ @ 15¢ ℔ 100 above carload prices.

**Plates, Tubes, &c.**—Duluth parties have placed orders for 2000 tons of steel Ship Plate and Angles, part with Pittsburgh manufacturers direct and part through Chicago agents. Competition was very keen. Other large specifications are on the market, and general business is also very good. Local dealers are ordering additional stock by rail, which is unusual at this season, but is done to gain time. Prices are firmer but unchanged. Nos. 10 to 14 Iron Sheets, 2.70¢ @ 2.80¢; do., Steel, 3¢ @ 3.10¢; Tank Iron, 2.65¢ @ 2.70¢; Steel, 2.80¢ @ 2.90¢; Shell Steel, 3.25¢; Flange Steel, 3.50¢; Fire Box Steel, 4.50¢; Rivets, 4¢ @ 4.25¢; Norway Rivets, 40%, off; Tubes, one three-quarter and less, 40 % off; two to four and a half, 50 % off; larger, 52½ % off.

**Merchant Steel.**—In Merchant Steel some heavy orders have been placed by plow manufacturers, covering both slabs and bars, but all of them have not yet bought. A very large tonnage will be required in that direction the coming year. Implement makers are now sending out their specifications and asking for bids, so that the Steel men are having a lively time at present. They report their general trade quiet, with prices firm but unchanged. Tire Steel is now quoted at 2.40¢ @ 2.50¢ rates; Open Hearth Spring and Machinery, 2.50¢ @ 2.75¢; Bessemer Machinery, 2.25¢ @ 2.30¢; Crucible, 3.50¢; Tool Steel, 7¢ and upward; Crucible Sheets, 7¢, 8¢ and 10¢.

**Sheet Iron.**—Sheet Iron continues in strong demand with good orders yet to be placed. Manufacturers ask 3¢ at mill for No 27 Common. A little flurry has been caused among local jobbers by some of them selling to their trade for future delivery. Others have cut the price for immediate. Sales from stock have thus ranged from 3.20¢ to 3.30¢ for No. 27. Galvanized Iron has been very active and some of the manufacturers have now withdrawn quotations on account of the advance in Spelter and other materials, believing that they can get better prices later. Jobbers still quote Juniata at 65 % off, which is now lower than manufacturers' prices.

**Steel Rails and Track Supplies.**—These continue as last quoted with a moderate business in progress. Quotations range from $34 to $35, according to time of delivery. Iron Splice Bars are quoted at 1.95¢ @ 2¢, and Steel at 2.10¢ @ 2.15¢, with a fair demand. Spikes sell at about $2. Bolts with Hexagon Nuts have been offered at 3¢, September delivery.

**Old Iron Rails.**—Old Rails are firm but not higher in price. Sales have been made at $25.50 @ $25.75. The local supply is small, but manufacturers are also buying sparingly. Old Steel Rails are quiet, local dealers stocking up in anticipation of a better demand in the fall. Old Car Wheels are sought after to some extent. Most of the stock here has now been absorbed and holders are firm at about $19.50.

**Scrap.**—Scrap is quieter in view of the stoppage of many mills, but the supply is not large and prices are firm. An inquiry has been received from the seaboard for 2000 tons for mill use. Dealers ask from $20.50 @ $22 for Forge and Railroad Wrought; $16.50 for No. 1 Mill; Pipes and Flues, $15; Cast Boring, $9 @ $9.25; Wrought Turnings, $13; Axle Turnings, $14; Machinery Cast, $13.50; Stone Slate, $9; Horse Shoes, $19.50. In Steel Scrap very little is now doing. Mixed is held at $14.50.

**Pig Lead.**—The market is firm and in short supply. Some of the old Corwith stock was put on the market at 4.40¢, below the market and Desilverized sold at 4.50¢. Most of the large sellers are behind on deliveries.

## Louisville.

LOUISVILLE, KY., June 30, 1890.

**Pig Iron.**—The market is firm, with no concessions being made, purchasers finding it necessary to pay full prices, and do not look forward to lower prices. The demand is good and will likely continue so, as consumers report having a large amount of orders on hand. For immediate delivery No. 1 Foundry and Gray Forge are scarce. Sales during the week have not been heavy, but this was owing to the heavy transactions of the past two weeks. Reports from the South indicate that some trouble may be experienced among the workmen, but it is generally anticipated that this will be avoided, and that the employees recognize that the furnaces are not in position, owing to the lowness of the market, to pay any advance, and will accept this statement of the condition of affairs as true. If a strike should take place, with the heavy consumption going on, Iron for prompt shipment will undoubtedly advance. Indications during the last day or two from the East, of a better market, which was not true during the first part of the week, is having the additional effect of strengthening the views of those considering the present market a strong one.

## Cleveland.

CLEVELAND, June 30, 1890.

**Iron Ore.**—After ten days of idleness the striking switchmen in the local yards have returned to work and Ore is again going forward to the furnaces. The strike also diminished the fuel supply held by the fuanace men, and there were fears of a famine that would necessitate the banking of several stacks. This danger has now been averted, and every available car is being utilized in transporting Ore to the furnaces. About 50,000 tons were unloaded on the local docks during the past seven days. There have been no variations of consequence in the condition of the local market. Trade has not been brisk, but prices appear to be as firm as ever. The demand for Non-Bessemers has been renewed and a few scattering sales are reported at $4.25 @ $4.50, f.o.b. vessels, lower lake ports. Transportation rates are unchanged.

**Pig Iron.**—Very few new features are discernible. Trade is fairly brisk, with prices unchanged. Many dealers cling to the hopes expressed three or four weeks ago, of materially improved quotations, but the majority anticipate only a moderate increase in prices. The fears expressed in the East regarding the limitations of the Ore supply are pronounced unwarranted here, and it is asserted that the Lake Superior district will increase its Ore producing capacity as rapidly as new furnaces are built or the facilities of the present ones increased. The demand for Charcoal Irons continues, and $21 has been paid for several small orders of Hot Blast. Bessemer Irons remain somewhat inactive. The demand is fairly good, but buyers and sellers do not agree as to equitable prices. The semi-annual shut down will occur next week; a fair proportion of the mills observing this custom. Buyers seem disinclined to anticipate the future, and nearly all demands now being made are for immediate delivery.

**Old Rails and Wheels.**—Sales of Old American Rails at $25.75 @ $26.50 are reported. Old Wheels are not in very general demand at $19. Old Steel Rails are quiet at $20.50 @ $21.

**Scrap.**—There is a fair demand and a moderate trade. Railroad Wrought is held at $21.50 @ $22; No. 1 Forge, $20 @ $20.50, and Wrought Turnings, $13.25 @ $13.75

## St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, June 30, 1890.

**Pig Iron.**—The market has been a trifle dull during the week under review, the largest single sales not amounting to much over 200 tons. The market is steady, however, and consumers appear willing to pay ruling prices. Southern furnaces report their order books as being well filled, and are not anxious for business except for moderate quantities for shipment within the next four or six weeks. General business is in good shape, and those trades which are intimately associated with the Pig Iron industry are all enjoying a fair degree of activity, while the outlook for a steady consumption of Iron is better to-day than it has been at any time this year. Prices are strictly adhered to as quoted herewith:

| | |
|---|---|
| Southern Coke, No. 1 Foundry, | $16.00 @ $16.25 |
| Southern Coke, No. 2 Foundry, | 15.50 @ 15.75 |
| Southern Coke, No. 3 Foundry, | 14.75 @ 15.00 |
| Gray Forge | 14.25 @ 14.50 |
| Southern Charcoal, No. 1 Foundry | 18.25 @ 18.75 |
| Southern Charcoal, No. 2 Foundry | 17.25 @ 17.75 |
| Missouri Charcoal, No. 1 Foundry | 17.75 @ 18.25 |
| Missouri Charcoal, No. 2 Foundry | 17.00 @ 17.50 |
| Ohio Softeners | 18.50 @ 19.00 |

**Bar Iron.**—Mills are well filled with orders, so much so in some cases that they are entirely out of the market, so far as immediate delivery is concerned. Prices are well maintained at 1.80¢ @ 1.85¢ from mill, while lots from store are held at 2¢.

**Barb Wire.**—Mills are well employed and their products are taken as fast as made. Production has been curtailed to some extent on account of the excessive heat, the men being unable to work steady throughout the day. Prices show gradual improvement, and 2.85¢ @ 2.90¢ for carload lots of Painted seems to be bottom. Some complaint is made regarding the prices made by outside mills, but it is generally thought that these mills are now pretty well filled with orders, and for the time being out of the market, at least at figures that are lower than above quoted.

## Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, July 1, 1890.

**Pig Iron.**—There has been no perceptible change in the condition of the market since last report; prices are unchanged and the feeling is very conservative and firm. In consequence of the closing of the first half of the year, when consumers desire to work up as clean as possible, shipments have been held off, but now it is different; request is made upon the furnaces to ship as fast as possible, but the demand for cars to ship watermelons is so great that the lines cannot supply the demand. There cannot be less than 500 to 1000 carloads every day being forwarded to Northern points over the Southern lines, so that shipments of Pig must necessarily be seriously interfered with. Inquiries have been very numerous for the past week, and some large round lots have been sold on a basis of $12.50 for No. 1. This grade for the past few weeks has been in great demand, much more than the ability of stacks to promptly respond to. There has also been quite a spirited demand for Open Bright and the furnaces are quite bare of this grade. The construction of plants for remelting of Pig Iron is now actually under way, and will be completed the present year; that will add to the present consumption at least 150,000 tons per annum, and several others are being talked of, and some of them will, no doubt, be consumated, thus adding further to the consumption of Southern Pig in the South. There is no doubt the time will come when the remelting of Pig will become a very important factor with the Southern furnaces.

## Detroit.

WILLIAM F. JARVIS & Co., under date of June 30, 1890, say: While there have been no important changes in the market since our last report, the firmness on the part of sellers is particularly noticeable. No concessions are being granted for any grades of metal, possibly, excepting what may be termed "job lots" from the South for quick delivery. The large transactions in Lake Superior Charcoal which we have mentioned during the whole month of Junce were not continued, although inquiries that selling agents are still receiving plainly indicate that some considerable quantities must still be bought. Figures have remained normal, except in spots, where about 50¢ ₱ ton advance over lowest prices of June is being asked and obtained. With a quiet market figures are as follows:

| | |
|---|---|
| Lake Superior Charcoal, all numbers | $20.50 @ $21.00 |
| Lake Superior Coke, Bessemer | 20.00 @ 21.00 |
| Katahdin (Maine Charcoal) | 24.00 @ 25.00 |
| Lake Superior Coke Foundry, all ore | 19.25 @ 20.75 |
| Southern No. 1 | 17.00 @ 17.50 |
| Southern Gray Forge | 15.25 @ 15.50 |
| Jackson County (Ohio) Silvery | 18.50 @ 19.00 |

## Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts. CINCINNATI, July 2, 1890.

*(By Telegraph.)*

**Pig Iron.**—Dullness has been the most conspicuous feature in the local market for Pig Iron during the week under review. Southern furnaces, at least those in the Birmingham district, are in a state of idleness, enforced upon them by the miners' strike. Much difficulty, too, is experienced in making prompt shipments upon contracts because of scarcity of labor. But the largest Southern companies are so well sold that few of them

would be able to take additional orders of moment for several months, even where there is less uncertainty as to the future because of labor troubles. The orders placed recently have been almost entirely of small amounts and mainly for nearby delivery, at least for consumption during the summer. The absence of large transactions is attributed to the desire always in force at the season to arrange previous contracts, at least until after stock taking and settlement, which demand attention in July. Many of the rolling mills in this section have been compelled to suspend because of the intense heat, but notwithstanding the present dullness, a comparison of the business of the past week with that of the corresponding week a year ago shows a gain. As a rule, a confident tone prevails, based upon a large consumption, with the indication toward an expansion through the multiplication and increased capacity of industrial enterprises throughout the country. On the other hand, there is no denying the fact of an almost unprecedented output, and the probability of an ample supply, if not of a surplus. Buyers at times like the present are indifferent, and some assert their ability to shade the market prices and make good their claims in some instances; but as a rule, a firm feeling possesses the market and quotations are without change of importance. We quote as follows:

*Foundry.*

| | |
|---|---|
| Southern Coke, No. 1 | $15.25 @ $15.75 |
| Southern Coke, No. 2 | 14.75 @ 15.00 |
| Southern Coke, No. 3 | 14.25 @ 14.50 |
| Ohio Soft Stone Coal, No. 1 | 17.00 @ 17.50 |
| Ohio Soft Stone Coal, No. 2 | 16.00 @ 16.50 |
| Mahoning and Shenango Valley | 17.00 @ 17.50 |
| Hanging Rock Charcoal, No. 1 | 21.00 @ 22.00 |
| Hanging Rock Charcoal, No. 2 | 19.50 @ 20.50 |
| Tennessee and Alabama Charcoal, No. 1 | 17.50 @ 18.50 |
| Tennessee and Alabama Charcoal, No. 2 | 18.00 @ 18.50 |

*Forge.*

| | |
|---|---|
| Gray Forge | 13.75 @ 14.00 |
| Mottled Neutral Coke | 13.25 @ 13.50 |

*Car Wheel and Malleable Irons.*

| | |
|---|---|
| Southern Car Wheel | 22.50 @ 23.25 |
| Hanging Rock, Cold Blast | 22.00 @ 22.50 |
| Lake Superior Car Wheel and Malleable | 21.50 @ 22.00 |

## Financial.

The general business situation in some of its aspects might be termed reactionary. This would be the natural tendency in prospect of the July settlements, the banks and all other monetary institutions being compelled to gather in their resources preparatory to making enormous disbursements in payment of dividends and semi-annual interests, estimated at something like $100,000,000 in the aggregate. Moreover, the speculative influences generated by the prospect of free silver coinage are withdrawn, and serves to account, in part at least, for a decided drop in values through a considerable range of products quoted on the Produce Exchange and in the grocery trade. The Clearing House exchanges for the week for the whole country show a decrease, compared with the previous week, of over $30,000,000, or 2.5 %. New York continues to decrease, principally because speculative stock transactions are decreasing. Outside of New York the increase is 10.4 %. Chicago increased 37.7; St. Louis, 12.9; Pittsburgh, 39.1; Cincinnati, 15.7; New Orleans, 20.2; Louisville, 24.9; Buffalo, 142.1; Detroit, 22.6; Cleveland, 32.5; Duluth, 126.7; Tacoma, 103.8; Chattanooga, 46.7; Birmingham, 25.8. Crop accounts are highly favorable. The harvesting of wheat is in progress as far north as the forty-second parallel, and the condition of the corn crop is generally reported as excellent. The Cincinnati *Price Current* raises its estimate of probable yield from 413,000,000 bushels, lately given, to 425,000,000 bushels.

Stocks were irregular. The decision of the Court of Appeals declaring the Sugar Trut combination illegal made that property active, with wide fluctuations. Another feature was a fall in Chicago Gas, followed on Friday by a recovery on news of the dismissal of the pending suit and the discharge of the receiver. Reading was moderately active and strong, on the announcement of the resignation of Mr. Corbin from the presidency, and there was good buying of Atchison, Topeka and Santa Fé, on reports of negotiations for a traffic agreement with the Missouri Pacific. On Monday the market was strong, with London an active buyer. The report that the National Bank of Buenos Ayres had failed was modified to the simple statement that dividends had been suspended. A feature was a rise in Sugar Trust, on a report that plans were complete for the reorganization of the trust; also in Manhattan Elevated, in Lackawanna and Atchison, Topeka and Santa Fé.

Government bonds were quoted as follows:

| | |
|---|---|
| U. S. 4½s, 1891, registered | 103 |
| U. S. 4½s, 1891, coupon | 103 |
| U. S. 4s, 1907, registered | 121⅛ |
| U. S. 4s, 1907, coupon | 122⅛ |
| U. S. currency 6s, 1895 | 113 |

The weekly bank statement showed an increase of $500,000 in the surplus reserve, which is now $6,645,825. Loans expanded $1,553,100, and deposits in a corresponding amount. Money was easy until near the close of the week, when several corporations called in their loans and rates advanced. Upward of $800,000 were received from the interior. Gold reports had no perceptible effect. Commercial paper was in light demand. Rates were 5 % @ 5½ % per week for 60 to 90 days, and from 6 % to 7 % for longer dates. Bar silver in London 47¼d ℔ ounce. New York selling price, as reported by bullion dealers, 104. The New York Stock Exchange reports silver bullion on hand, 5,902,717 ounces. Since June 1 the amount has increased 1,531,902 ounces. At Washington the impression is that the committee will consent to the purchase of $4,500,000 silver bullion monthly, and the issue of certificates redeemable in coin without bullion redemption.

The market for sterling was steady and post rates were reduced to 4.85¢ @ 4.88½¢. In London foreign securities were weak under apprehension of trouble in the Balkans. The Bank of England advanced its discount rate to 4 %.

The general markets were less satisfactory. Breadstuffs were steady and were stronger at the close on reports of better European markets. After July 6 the duty on Flour imported into Cuba will be increased 25 %, while Flour from Spain will be entered free. Spot Corn is up ¼¢ ℔ bushel. Coffee slow. Cotton is up 1/16¢. Provisions are generally a little lower, with little export inquiry. Sugar is unsettled. Ocean freights moderately active.

## Imports.

**Hardware, Machinery, &c.**

Baldwin Bros., Gun Barrels, cs., 11
Barbour Bros. Co., Mach'y, cs., 1
Boker, Hermann & Co., Anvils, 212; Arms, cs., 30; Ironware, cs., 4.
Bresselow, N., Mach'y, cs., 2
Erie Despatch, Mach'y, cs., 12
Electric Cutlery Company, Mdse.. cs., 4
Field, Alfred & Co., Arms, cs., 77; Anvils, 286; Hdw., pkgs., 6
Folsom, H. & D. Arms Co., Arms, cs., 18
Johnson, John & Co., Mach'y., pkgs., 38
Lau, J. H., & Co., Arms, cs., 9
Meacham Arms Co., Arms, cs., 26
Merchants' Despatch Company, Arms, cs., 58
Schoverling, Daly & Gales, Arms, cs., 52
Sheldon, G. W. & Co., Guns, cs., 10
Taylor & Tanse, Mach'y, cs., 5
Werlemann, H., Arms, cs., 55
Wiebusch & Hilger, Arms, cs., 56; Anvils, 116; Hdw., pkgs., 26.
Witte, John G. & Bro., Cutlery, cs., 8
Wyman, Chas. H. & Co., Arms, cs., 23
Order—Enameled Ironware, cs., 52

## New York.

Office of *The Iron Age*, 66 and 68 Duane street,
NEW YORK, July 2, 1890.

**American Pig.**—The market has been very quiet during the week, the only feature being the lessening influence of Southern Irons, which have been sold heavily during the past month or six weeks in the West, and are pressing less in this quarter. The miners' strike, which affects all the free labor in the Coal mines of the Birmingham field, will cut down production very sharply, the only company not affected being the Tennessee Coal, Iron and Railway Company, so far as the production of Pig Iron in Birmingham is concerned. For some time past some of the Northern Irons have led the market in this vicinity. Forge Iron, of standard quality, has sold this week at $15, delivered, while No. 2 has sold at $16 and No. 1 at $17.50 @ $17.75. We quote No. 1 Northern Iron, $17.50 @ $18.50; No. 2, $16 @ $17, and Southern Iron, No. 1, $17 @ $17.50; No. 1, Soft, $16.50 @ $16.75, and No. 2, $16 @ $16.25.

**Spiegeleisen and Ferromanganese.**—So far as 20 % Spiegeleisen is concerned the market is exceedingly dull. A somewhat significant transaction is the resale abroad of a lot of 1000 tons of German Spiegel at figures better than any which could be realized in this market. Nominally quotations here are $30.50 @ $31. In Ferromanganese a moderate amount of business is being done at $72.50 @ $75 for 80 %, according to time of delivery.

**Billets.**—Western makers report that they are in receipt of quite a number of inquiries from Eastern points, which they interpret as meaning that Eastern mills are closely sold up. There can be no question that the majority of Eastern mills are holding at figures equal to parity of Western prices, and in some cases above that. Still $32 can be done easily, and it is reported that $31.50 might be accepted.

**Wire Rods.**—The strength of the Western mills is reflected by higher asking prices on the part of Eastern works, who quote $43 @ $43.50 at sellers' mill. With a decline in Germany and the advance here the markets are approaching one another, and at least so far as the seaboard is concerned we are approaching the danger line. In Germany Basic Rods can now be purchased at 115 marks per 1000 kg. for fives. This would make the cost of foreign about $46 @ $46.50, ex ship.

**Steel Rails.**—The only sale of any magnitude is a lot of 10,000 tons to the Manitoba road, by an Eastern mill, at private terms. The Eastern mills, and so far as can be learned those in the West, are so well booked for July and August that it is practically impossible to place orders for the former month and very difficult for the latter month. For these two months the market is decidedly strong. Little fall work has been placed thus far outside of the contracts taken some time since for deliveries beginning in the summer and running along through the fall. There is some inquiry for fall and winter delivery, but as yet figures are not being named below $31 for such business. We continue to quote $31 @ $31.50.

**Structural Material.**—Bids have been put in for the viaduct at 155th street, which is quite an important contract We quote: 2.15¢ @ 2.20¢ for Plates, 2.15¢ @ 2.25¢ for Angles, 2.5¢ @ 2.6¢ for Tees and 3.1¢ for Beams and Channels.

**Old Rails.**—The market has been very active, and close to 6000 tons have been placed through brokers here. This does not include a lot of 2500 tons of Foreign, which it was reported had been placed for Philadelphia delivery at $25. Included in the sales is one lot of 2000 tons placed by a trunk line for Youngstown delivery

at $27, one lot of 1000 tons and two lots of 500 tons of Foreign at $24.50, ex-ship New York, one lot of 500 tons of American Tees on the line of a small Connecticut road, and 1500 tons in the aggregate of Domestic and Foreign.

**Fastenings.**—The market for Fish Plates continues low, with 1.75¢ as the price for delivery. Spikes are quoted by at least one mill at $1.95 @ $2 delivered, although the other leading mills ask $2.10. We quote Bolts and Nuts 2.85¢ @ 3¢.

**Cotton Ties.**—In order to forestall the advance in duties, Foreign Cotton Ties are being purchased liberally, and are now coming in in round quantities with nearly every fast steamer. The foreign price is understood to be £7. 5/ at mill, or about £7. 10/ at shipping port.

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Edward Corning & Co., of 18 Cortlandt street, this city, have issued recently a clearly printed table of weights of Iron and Steel Beams, Channels, Tee Iron and Angle Iron, even and uneven. The table is very handy for reference.

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### Pig Iron Warrants.

The following sales of Pig Iron Warrants are reported on the floor of the Consolidated Stock and Petroleum Exchange:

FRIDAY, June 27.

400 tons, July.....$16.¼
1200 tons, August.....16.⅝
400 tons, September.....16.⅝

MONDAY, June 30.

200 tons, July.....16.¼
800 tons, September.....16.⅛

## Metal Market.

**Copper.**—While the market for Lake Superior Copper retains a strong tone there is some little irregularity in prices, for which moderate offerings from second hands seems to be alone responsible. Thus about 200,000 lb Ingot were sold at 16¼¢, and a further quantity was subsequently offered at the same price. Still a prominent holder disposed of 150,000 lb at 17¢ for July and August delivery, and one of the mining companies sold a fair sized lot at the same price for August delivery. Later on there were transactions to the extent of 500,000 lb at 17¢, deliveries running three months ahead, the buyer having the privilege of taking one-half Bars and Cakes in the place of Ingot, on the usual 30 days' notice. The mining companies, by all accounts, are firm at 17¢. Arizona Ingot is very firmly held at 15½¢ by the producers, and 14½¢ is named as a close price for common casting brands. Manufacturers have advanced prices for nearly all their productions. Sheet and Bolt Copper was marked up 3¢ ₱ lb by the Association on June 27, and a similar advance was quoted on Copper Bottoms, Pits and Flats and Planished Copper 3¢ @ 5¢ on the same date, which in turn was followed by a rise of 1¢ on Seamless Brass and 2¢ on Seamless Copper Tubing on the 1st inst. James Lewis & Sons' circular, Liverpool, June 16, says: "In Furnace Material a very large business has been done, the French holders having reduced their stock of Anaconda Matte, which six weeks ago amounted to about 23,500 tons, to 3000 tons. On the 10th inst. 8500 tons were sold in one line at 11/6 per unit. As the quantity of Anaconda Matte included in the stocks on the 2d inst. was about 20,000 tons, or 12,000 tons Fine, as soon as delivery of what has been sold is made to the purchasers we may expect to see the stock of Copper in England and France reduced to about 60,000 tons—a level which, if supplies from the United States continue as scant as at present, will most probably lead to much higher values, and the price which the French syndicate sought to establish by artificial means may be reached in the natural course of trade."

**Pig Tin.**—The speculative "deal" in June Tin has been quietly settled, without actual transfer of any considerable amount of stock or commotion in the market. No fresh speculative zeal has been manifested, nor has the trade demand differed materially from what is customary at this season of the year. Heavy arrivals give the market a liberal supply of the metal, with the holdings fairly well distributed among the large dealers, and values are gradually seeking a normal basis. However, spot stock is yet commanding a premium over future deliveries, the deduction from which fact is that the fairly liberal supply here is in strong hands. Net cash prices on 10-ton lots are about 20.90¢ prompt and 20.80¢ for July and August delivery. Store prices about 21¢ for 5-ton lots, with the customary margin for smaller quantities. The fall seems to have been helped along by the decline in the London market, where prices are now about £2.10/ lower than they were a week ago. The statistical position as posted on the Metal Exchange shows: Visible supply July 1, 13,810 tons, against 13,736 tons a year ago and 12,781 tons June 1. Spot stock in the United States July 1, 1600 tons, and amount afloat 1700 tons, making a total of 3300 tons, against 3200 tons last year and 2500 tons a month ago. Present spot supply in Europe and America is 7742 tons, and amount afloat 6068 tons; last year, 7744 tons and 5992 tons respectively.

**Pig Lead.**—Operations in this metal have been on a smaller scale and prices have moved about irregularly, yielding at times to pressure from an alleged "bear" element. About 300 tons were sold, to arrive, at 4.45¢. Spot stock, at the same time does not appear to have been obtainable at less than 4½¢, and is now quoted at 4.52½¢, while shipments, it is claimed, can be secured at little if anything under 4½¢. The Western markets continue very firm, latest telegrams quoting 4.30¢ at St. Louis.

**Spelter.**—Fifteen car loads or more of prime Western Spelter have been sold in this market, chiefly at 5½¢, to arrive. The shipment prices are now at 5½¢ @ 5.55¢, and spot figures are 5⅝ @ 5.65¢, at which single car load lots have been taken. At the lower prices quoted, however, there seems to be nothing offering from first hands. Smelters, in fact, quote 5.65¢ for future shipments and offer sparingly at that, being sold ahead to a considerable extent. The consumption of the metal is represented as being unprecedented at this period of the year.

**Antimony.**—The market remains very firm, but rather quiet, with 21¢ @ 21½¢ quoted for Hallett's, 24¢ for Cookson's, and 22¢ for LX brand.

**Tin Plate.**—Business in this line has been on a rather small scale, and no improvement is visible in the demand from any class of buyers. Prices, however, remain very steady. Quotations for large lines, on the spot, are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $4.40 @ $4.42½; J. B. grade, do., $4.50 @ $4.55; Siemens Steel, $4.65; Bessemer do., $4.45. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $4.70; IX basis, $5.70; Siemens Steel, IC basis, $4.80, IX basis, $5.80. IC Charcoals—Calland grade, ½ X, $5.50; Melyn grade, $5.75; for each additional X add $1.50; Allaway grade, $4.90; Grange grade, $5.10 @ $5.15; for each additional X add $1. Charcoal Ternes—Worcester, 14 x 20, $4.90; 20 x 28, $9.50; M. F., 14 x 20, $7.00; do., 20 x 28, $13.75; Dean, 14 x 20, $4.55; do., 20 x 28, $9.00; D. R. D. grade, 14 x 20, $4.45; do., 20 x 28, $8.90 @ $9; Mansel, 14 x 20, $4.50; do., 20 x 28, $9; Alyn, 14 x 20, $4.55; do., 20 x 28, $9; Dyffryn, 14 x 20, $4.65; do., 20 x 28, $9.20; Wasters—S. T. P. grade, 14 x 20, $4.20; do., 20 x 28, $8.65; Abercarne grade, 14 x 20, $4.20; do., 20 x 28, $8.60.

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### New York Metal Exchange.

The following sales are reported:

FRIDAY, June 27.

20 tons Tin, July.....21.15¢
20 tons Tin, August.....21.00¢

MONDAY, June 30.

10 tons Tin, July.....21.00¢

## Coal Market.

Anthracite Coal producers speak of a better tone as the effect of advancing prices, which tended to spur up tardy buyers. They would have it understood that filling orders at June prices could only be done as a special concession, in view of the advance of 10¢ @ 15¢ ₱ ton for July, recently announced. Quotations now are: Broken, $3.65; Egg, $3.75; Stove, $4; Chestnut, $3.65, all f.o.b. at tidewater. Production continues heavy, partly necessitated by the continued active demand for manufacturing purposes. The smaller sizes more particularly go into stock, but confidence is felt that any accumulation will be soon reduced, when the busy season commences, at the beginning of autumn. The official statement of shipments from the mines is as follows, for the week ending June 21:

| Regions. | 1890. Tons. | 1889. Tons. | Difference. Tons. |
|---|---|---|---|
| Wyoming..... | 442,101 | 414,686 | Inc. 27,415 |
| Lehigh..... | 140,562 | 135,447 | Inc. 5,115 |
| Schuylkill..... | 252,354 | 203,609 | Inc. 48,745 |
| Total..... | 835,017 | 753,742 | Inc. 81,275 |
| Total for year. | 14,328,278 | 14,344,198 | Dec. 15,920 |

For July the allotment was fixed at 3,250,000 tons.

The Bituminous market is dull, and well supplied quotations are 3.25 f. o.b in New York. Miners in the Clearfield district have submitted a new scale of prices for their acceptance, and a strike is not impossible. Cumberland shipments for the week ending June 21 are 69,000 tons, and for the year to date 1,706, 500 tons.

The Boston and Albany has recently been cutting into the local coal trade of the New York, New Haven and Hartford and the New York and New England roads in Massachusetts and Connecticut, compelling the two roads to reduce their rates very materially.

Pennsylvania Railroad shipments for the week were 203,000 tons, and for the year, 5, 664,000 tons, an increase of 1,411,000 tons. Reading shipments for the week 170,000 tons, of which 52,000 tons were sent to Port Richmond and 20,000 tons to Port Liberty. Vessels are reported.

Despite claims made as to actual prices, it may be stated confidentially that current sales of Free Burning Broken are about 15¢ less, and Egg and Stone about 10¢ less than the latest official schedule; in other words, that the May circular prices more truly represent the market than those of June, saying nothing about July.

Fancy brands of Lehigh Hard Coal are firmly held. Sugar Loaf, Broken and Egg, $4.00; Stove and Chestnut, $3.75; Beaver Meadow, Broken and Egg, $3.85; Pea and Buckwood, $2 00, and $1.50 per ton, all net, f. o. b. Lehigh Coal Exchange prices are: Broken, $4.10; Egg, $4.00; Stove, $4.15; Chestnut, $4.00.

# British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, July 2, 1890.

Scotch warrants have advanced to 46/ under the influence of increased purchases, due in part to larger demand from the Continent for makers' brands, and more inquiry from America. Cash warrants appear to be momentarily scarce, as late buyers are reluctant to sell. This causes some uneasiness among the "bears," some of whom have covered their recent short sales. Cleveland warrants are also better, having been sold up to 43/3, and makers' Iron is moving more freely. Hematites remain at about 51/9, however, in the absence of improvement in the demand for consumption. Ironstone miners' wages have been reduced 10 per cent., which, coupled with a drop in coke, reduces the cost of manufacture of Pig Iron considerably.

Dealers report an improvement in the American demand for Old Material, Rails more particularly, and the market is showing a hardening tendency. There is improvement in the demand for Steel Rails and the market is firmer at £4. 17/6 @ £5 for standard sections. However, the cost of production in some districts is above present selling prices and makers are discouraged. The Forest works at Pontypridd are about closing, owing to lowness of prices.

Copper speculation has been flat and prices for Merchant Bars have receded to £57. 15/. The change is attributed chiefly to the uncertain position of Continental holders. Demand for home consumption continues good, as also that from India, and statistics continue favorable. Visible supplies have decreased 9500 tons during the month. Sales of Furnace Material the past fortnight include 200 tons Anaconda Argentiferous Matte on private terms.

Tin prices have been erratic and varied as much as 40/ during the week, sales having been made Tuesday at as low at £92. 15/. Heavier supplies are partly the cause of the drop, this fact having caused operators to tire of their holdings and realize. There has also been apparent forced sales with a view to depressing the market in order to buy cheaper later on.

Makers are firm on prices for Tin Plates, but business has been moderate and orders are scarce. Makers refuse to negotiate on other than short date contracts. The American demand has lessened, but improvement is expected on the settlement of the tariff question. The Knight and Cookley Works, Crowther, Stourvale, have amalgamated.

**Scotch Pig Iron.**—The demand has continued fairly active and prices firmer, with a slight advance on some brands.

| | | | |
|---|---|---|---|
| No. 1 Coltness, | f.o.b. Glasgow | ..... | 62/ |
| No. 1 Summerlee, | " " | ..... | 61/6 |
| No. 1 Gartsherrie, | " " | ..... | 60/ |
| No. 1 Langloan, | " " | ..... | 62/ |
| No. 1 Carnbroe, | " " | ..... | 47/ |
| No. 1 Shotts, | " at Leith | ..... | 53/ |
| No. 1 Glengarnock, | " Ardrossan | ..... | 60/ |
| No. 1 Dalmellington, | " " | ..... | 52/ |
| No. 1 Eglinton, | " " | ..... | 47/6 |

Steamer freights, Glasgow to New York, 2/, nominal; Liverpool to New York, 10/.

**Cleveland Pig.**—There has been a larger business, and the market is much firmer, with makers now quoting 43/ for No. 3 Middlesborough, f.o.b.

**Bessemer Pig.**—No improvement in the demand has been noticeable, and prices are without alteration. West Coast brands, Nos. 1, 2 and 3, 54/, f.o.b. shipping port.

**Spiegeleisen.**—Demand has continued very fair and prices are quite firm. English 20 % is quoted at 92/6, f.o.b. shipping port.

**Steel Rails.**—More orders are on the market, and makers' prices are firmer. Heavy sections quoted at £4. 17/6 @ £5, and light sections £5 @ £5. 10/ @ £6, f.o.b. at N. W. England shipping point.

**Steel Blooms.**—The market continues very quiet, and there is no change in makers' prices. We quote £4. 15/ for 7 x 7, f.o.b. at N. W. England shipping point.

**Steel Billets.**—Former prices are named by makers and the demand continues light. Bessemer 2½ x 2½ inches, £5, f.o.b. at N. W. England shipping point.

**Steel Slabs.**—There is no change in prices, and the demand is slow. Bessemer quoted at £5, f.o.b. at N. W. England shipping point.

**Old Rails.**—There is a better feeling and more demand reported. Tees quoted at £3 @ £3. 2/6, and Double Heads £3. 5/ @ £3. 7/6, f.o.b.

**Scrap Iron.**—The market yet rather quiet and prices barely steady. Heavy Wrought quoted at £2. 12/6 @ £2. 15/, f.o.b.

**Crop Ends.**—Prices remain unchanged and demand continues light. Bessemer quoted at £2. 17/6 @ £3, f.o.b.

**Tin Plate.**—There is little business doing at present, but makers' prices are firmly held. We quote, f.o.b. Liverpool:

| | |
|---|---|
| IC Charcoal, Alloway grade | 16/ @ ... |
| IC Bessemer Steel, Coke finish | 14/3 @ ... |
| IC Siemens " " " | 14/6 @ ... |
| IC Coke, B. V. grade | 14/ @ ... |
| Charcoal Terne, Dean grade | 14/ @ ... |

**Manufactured Iron.**—Business has been fair and prices have undergone little change. We quote, f.o.b. Liverpool:

| | £ s. d. | | £ s. d. |
|---|---|---|---|
| Staff. Marked Bars | | @ | 9 10 0 |
| " Common " | | @ | 7 5 0 |
| Staff. Bl'k Sheet, singles | | @ | 8 0 0 |
| Welsh Bars (f.o.b. Wales) | | @ | 6 2 6 |

**Tin.**—The market quiet, and prices showing little change. Straits quoted at £92. 17/6 @ £93, spot, and £93. 12/6 @ £93. 15/ for three months' futures.

**Copper.**—The speculative market rather weak, with little doing. Chili Bars quoted at £57, spot, and £57. 15/, three months' futures. Best selected, £64 @ £65.

**Lead.**—Prices steady and demand fair. Quoted at £13. 5/ for Soft Spanish.

**Spelter.**—The market rather weak, with little doing. Quoted at £23 for ordinary Silesian.

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The New River Mineral Company's furnace, at Ivanhoe, Va., after an idleness of two months, has gone in blast. During this time the furnace was relined, enlarged and a 200 horse-power Babcock-Wilcox boiler put in. The present dimensions of the furnace are: Hight, 60 feet; breadth, 12 feet 6 inches; hearth, 7 feet. The furnace is doing excellent work on a 43 per cent. mixture, having reached a daily output of 61 tons. The manager, Austin Farrell, expects to do still better when he gets the full burden on the furnace.

## VIRGINIA IRON NOTES.

Another important development company recently incorporated is the Elliott's Knob Iron, Steel and Coal Company. The capital stock is $1,000,000, with permission to increase same if necessary. The officers of the company are: W. D. Rippetoe, president; F. F. Cinniotti, of New York, vice-president, and N. M. Wagner, of Staunton, secretary. The office of the company for the present will be at Staunton.

The old Wythe Lead and Zinc Mining Company are undergoing reorganization. The property of this company is situated in Wythe and Carroll Counties, and consists of 5500 acres. Beside mines of zinc and lead, there are valuable deposits of iron ore. It is now proposed to develop this extensively, and in addition lay off a town, and locate a number of important industries.

The Valley Engine and Machine Works, of Williamsport, Pa., the plant recently mentioned as to be removed to Lynchburg, has been capitalized at $150,000, and incorporated with W. P. Riley, of Williamsport, Pa., as president; James G Watkin, vice-president, and Oscar Rierson, secretary. This company are now building the new plant.

The two Meier coke iron furnaces near St. Louis, Mo., have been purchased by an Ohio syndicate, who will remove them to Big Stone Gap.

At Alexandria the Erwin Land and Iron Company, with $500,000 capital stock, have been incorporated.

Negotiations that have been pending at Buena Vista for the establishment of a basic steel plant are said to have terminated successfully.

St. Paul is another new town in the Southwest iron region that will shortly take steps to erect an iron furnace. This town is on the Charleston, Cincinnati and Chicago Railroad.

The development company at Glasgow are negotiating for the removal of a New York hoe manufactory to Glasgow. This is the town projected by Gen. Fitzhugh Lee, ex-Governor of Virginia.

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The Scranton Steel Company, of Scranton, Pa., made and shipped a little over 100,000 tons of rails in the first half of 1890. Considering the size of the works, this is an unpreceded record. It puts the Scranton Works third on the list, Edgar Thomson and Illinois Steel Company alone being greater.

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The people of the Philippine Islands want to trade extensively with the United States. Salvador Chiepré, chairman of Commercial Exchange of Manila, a city of over 300,000 inhabitants, is in this country for the purpose of arranging plans for the extension of the commercial relation between the Philippine Islands and this country. He said: "We do not want to pay cash, but make payments in our products. A great deal of Manila hemp and sugar is imported here every year, but we want to increase the shipments and take our pay in your goods."

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Eight hundred men employed at the Fishback rolling mills of the Pottsville Iron and Steel Company, in Pottsville, struck Monday morning because the president and general manager refused to sign the wages scale.

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It is proposed to make Riker's Island, in the East River, a dumping ground for city refuse, thereby reclaiming 400 acres, prospectively worth $2,000,000. Then, when the buildings now on Blackwell's Island can be transferred to their new home on Riker's Island, Blackwell's Island can be made a park which will be the pride of New York.

# HARDWARE.

## The Condition of Trade.

The business of June was on the whole quite satisfactory, the demand continuing to the close of the month fully up to the average and with a good feeling as regards prices. The recovery which has taken place in the prices of some leading goods since the break early in the season induces a somewhat hopeful feeling, and the condition of the Iron and Metal market is such as to cause firmness in several lines of goods. The continuance of an exceptionally good business in some of the principal Hardware centers is also an important fact, and, taken all in all, July is regarded as opening under favorable auspices.

The following are our special reports from leading markets :

### Chicago.

(*By Telegraph.*)

The Hardware trade continues active, in spite of the hot weather. Manufacturers' agents report their trade for June far in excess of the same month last year, although not so heavy as the previous two months. Shelf Hardware jobbers are straining every nerve to get out all orders by Thursday night, so as to close their shipping departments until Monday. Heavy Hardware jobbers state that June was the biggest month they ever had. Prospects are still most excellent. Collections are very good, owing to the brisk demand for agricultural products, which makes money plenty among the farmers. Soft metal products are the only commodities showing changes in price. They are all advancing. Manufactured Copper was advanced 3¢ in the last week. *Nails* are quite firm from first hands, but Steel Nails are quoted at $1.85, at factory, or $2 Chicago in large lots. *Wire Nails* are quoted by manufacturers at $2.40, Chicago, to best buyers. Jobbers quote Cut Steel Nails at $2.05, and Wire Nails, $2.50 from stock, with slight concessions according to circumstances. The demand is good and the chances are in favor of a steady market for some time. *Barb Wire* is hard to get. The jobbers are unable to secure enough to fill their orders promptly. They quote 2.9¢ for Pointed and 3.5¢ for Galvanized, and make no allowance for quantity, treating large and small customers alike.

### St. Paul.

Farwell, Ozmun, Kirk & Co.—This is what might be called growing weather; the heat for the past few days has been intense, but does not seem to check business, the volume of trade being fully up to the average. Orders are coming in freely now for Haying Tools; prices on these goods do not vary materially from last year. Scythes about the same, Forks a little cheaper and Hay Rakes about 10 per cent. higher. The jobbers of the Twin Cities stiffened up prices on Barb Wire, Steel Cut and Wire Nails 10 cents per 100 pounds about two weeks ago, in sympathy with advances at the mills. This however, has not had any appreciable effect on the demand, as we are still receiving orders faster than we can get supplies. The Wire Nail seems to be growing greatly in favor with the country trade; we find our sales of them are fully half of our total nail sales, when last year they were not more than one-third. There is a good demand for Shelf Hardware of all kinds, and there seems to be a good feeling generally as to prospects for fall trade. Collections have fallen off somewhat the past fortnight, but we always look for light receipts at this season. Business among the retailers in the Twin Cities is fairly good, but begins to show signs of the midsummer slackness.

### St. Louis.

The demand for heavy Hardware and Builders' Supplies of all kinds continues to be unusually strong. Seasonable goods such as Refrigerators, Fly Screens and Ice Cream Freezers have had a veritable boom during the past ten days, occasioned by the excessive heat. There is but little complaint regarding prices, and at present are more strongly adhered to than they have been for some time past. Taking in the general situation we find a large volume of business being transacted at prices that are satisfactory to all concerned.

### Omaha.

Lee-Clarke-Andreesen Hardware Company.—The jobbing Hardware trade of this metropolis continues to show gratifying activity in all lines. The trade tributary to Omaha is steadily increasing, and as the back country fills up with people and grows richer, accumulating surplus wealth and demanding more and better goods, the future is bright even to pessimists and doubters, who must handle to be convinced, and on all sides the rapid growth of this city in particular, in wealth and population, is manifest. Collections are easy, our country friends being duly mindful of their obligations, and few favors in any way of delay are requested. The situation as a whole, therefore, is satisfactory to contemplate. The action of the Senate Finance Committee on the Tariff bill is awaited with interest by the mercantile community here and elsewhere, and hopes are expressed that the Senate may evince a comprehensive knowledge of what the country really needs.

### Boston.

Bigelow & Dowse.—From all sections there are good reports from the dealers, who are unusually busy for this season of the year. The sales on seasonable goods have gone beyond the preparations made either by the manufacturers or the jobbers. It is impossible to get a desirable Scythe Snath in the market or at the factories. There are but few Screen Doors left in stock, and it is impossible to get many desirable styles of Window Screens. Wire Cloth is having a ready sale and stocks are light. The jobbers must surely be well satisfied with their June sales. The wholesale Hardware dealers will close their places of business on Saturday following the Fourth of July. This will give all hands a welcome holiday after the hard work of the past two months.

### Portland, Ore.

Foster & Robertson.—Two weeks ago there prevailed a general fear of a drought throughout the Willamette Valley (the territory lying south of Portland and west of the Cascade Mountains), owing to an unusually long dry spell for the spring of the year, but the bountiful and refreshing showers that have fallen within the last ten days, reaching to a greater or less extent every section of this favored locality, have entirely removed this apprehension, so that to-day in the Willamette Valley—"The Garden Spot of the Earth"—good crops are assured beyond a reasonable doubt. This, added to the very promising reports that continue to come in from the "Inland Empire" (the territory lying east of the Cascade Mountains), and also from the "Sound Country" (the territory lying north of Portland and west of the Cascade Mountains to the Canadian line), makes an unclouded prospect for fall crops and future trade. Local trade continues excellent. Many large and expensive buildings are in course of erection in this city and vicinity, while Seattle, Tacoma and Spokane Falls maintain their usual activity. Prices continue firm, but without any particular change, and the movement of goods is very general along the entire line. Scythes, Snaths and Steel goods, the trade in which has been later than usual, are beginning to move quite freely. The very cool weather that has prevailed almost continuously this spring has affected the trade in Wire Cloth, Screen Doors and Window Screens, and the prospects are that jobbers will carry over a portion of their stock. There is much activity in railroad building, which keeps up a constant demand for Shovels, Picks and other tools for construction purposes, while the very large demand for Crosscut Saws, Axes, Peaveys and kindred tools indicates a large measure of activity in the logging and lumber interests.

### Cleveland.

W. Bingham Company.—Since sending our last report the volume of business has not fallen off to any appreciable extent. In fact, it has been above the average for the last weeks of June. Nails are being firmly held at $2 from stock and $1.90 from mill for steel cut, and $2.45 from stock and $2.40 from mill for wire, with fair demand. The demand for fence wires still keeps up, and the mills are considerably behind on their orders, owing partly to the exceptionally large trade for so late in the season, and partly for the local railroad strike which took place in this city last week, causing one mill to shut down for want of fuel and the refusal of railroads to receive freight from outside mills for this point. Crop prospects are very fair in this section, with the exception, perhaps, of corn, retailers reporting the outlook for Fall business as

good. Local dealers have had unusually large sale for all kinds of lawn goods. The frequent rains we have had all through the spring have made the lawns unusually luxuriant, and it has been almost impossible to get mowers enough to supply the demand. As anticipated in our early spring reports, the sale of builders' hardware has been exceptionally good. Upon the whole, the first half of 1890 is winding up very satisfactorily, with a considerable increase in business over that of a year ago.

**Baltimore.**

CARLIN & FULTON.—This is probably the most quiet season of the year with reference to sales, partly on account of many houses ending their fiscal year with this month and being busy with their inventories; also to the fact that the farmers are harvesting their wheat and hay crops and giving little attention to other things. With the thermometer in the nineties the exodus from the city has begun to the seashore and the mountains, to the summer boarding houses and the more hospitable homes of our country cousins. The uncertainty as to the Tariff bill, and the problematic effects of silver legislation are still matters for thought and discussion in trade circles, and it will be a great relief when both matters are finally disposed of, so that business can adjust itself to whatever new conditions arise. In prices we note the following:

Maslin Kettles, 70 per cent. discount.
Brass " 25 " "
Strap and T Hinges 75 per cent. discount.
Common Carriage Bolts, 70, 10&7½ per cent. discount.
Padlocks, 75&10 per cent. discount.
Drop Shot, $1.35 per bag.
Buck and Chilled, $1.60 per bag.
Buck Thorn Fence:
Close Set, 4¼ cents per pound.
Wide Set, 5½ cents "
Ribbon, 4¼ " "

An advance has occurred in Saws, the result of the recent combination of the different manufacturers. There is considerable inquiry for Loaded Shells, many offers being submitted by buyers who wish to be booked for shipment at present prices in the event of an advance, but with prices stationary they too have the option of naming the date for shipment. There is no limit to the amount of business which could be done in this way by houses willing to do it, and possibly some can be found that will.

**Louisville.**

W. B. BELKNAP & Co.—We have to report a good volume of business, notwithstanding a protracted term of extreme heat, which it would seem would materially impair human energy and so cut off consumption. Prices on all staple goods may be considered as very firm at moderate advances, though the best informed of our correspondents do not look for much higher figures if the present scale of production keeps up. Indeed, some of the mills, which a short time since withdrew from the market, are again soliciting orders. That there is an immense tonnage moving is indicated by the difficulties which the railroads are experiencing in handling their regular business. Should the Western rivers continue to fall, we may look for a freight blockade all over the country. The capacity of railroads to take care of their freight or passengers is already overtaxed, and we do not believe it is sufficient for the addition which would be thrown on the roads should navigation be seriously interfered with. If the unusually early heated term does not interfere with the health of communities generally, we believe that we shall see an active trade for the next three months, beginning in July. Money is fairly abundant and actively employed.

**San Francisco.**

HUNTINGTON, HOPKINS & Co.—We have nothing new to report regarding the Hardware situation in this market. We may confirm our report made you two weeks ago, supplementing it with the fact that there is beginning to be a very slight movement in the way of remittances, and we expect very shortly that remittances will be much livelier, as harvest is almost here and the grain crop will soon be put in the market. This crop, in certain portions of the State, will be very good, and we expect satisfactory prices will be realized, thereby enabling the farmer to pay up, and in turn allowing the merchant to square up with the city merchants.

**Philadelphia.**

SUPPLEE HARDWARE COMPANY.—The prediction made by us in our last letter to you, stating that there would naturally be a falling off in trade during the next two weeks, has hardly been confirmed. Trade has continued active during the last two weeks, more so, we think, than any two weeks of June in any previous year, and, we think, that in volume of trade no jobbers in our city have any cause for complaint. There is naturally complaint in the small margin of profits made upon goods, especially on leading goods the margin of profit is cut to an infinitesimal small percentage. There has been complaint throughout the country of delays in goods reaching their destination. This is not only the case in goods being shipped from our city, but we have no doubt on goods going forward from New York, as well as other cities between here and Chicago the same delay has exhisted, and this is not to be wondered at when the increase in shipments are made known. The shipments from Philadelphia this season over the Pennsylvania Railroad is far in excess of any previous year. They are even unwillingto tell what the excess is. We only know that new rolling stock is necessary, in order to accommodate this increased business. The Reading Railroad is also far in excess of anything ever known, and the Baltimore and Ohio from our city has reported excess of tonnage, reaching into the millions, of any previous year. It will be seen from this that the volume of trade has greatly increased. This extends to all leading cities, and it is therefore quite natural that there should be a strong competition between the manufacturers of some line of goods as well as between jobbers. The small margin of profit on goods now makes it necessary for all houses to have their salesmen well in hand, and have salesmen who will neither lose their heads nor imagine because they do not receive an order, some competitor has given a lower price. If they realize the fact that two or three parties could not take the same order but that houses will divide their orders, much of the severe competition would be avoided, as it is a well-known fact that neither manufacturers nor jobbers can do business successfully without profit. Th's, however, will cure itself in time, and quickly when goods are scarce, and from the present outlook there will be a scarcity of Hardware this fall. Manufacturers have no large stock on hands, and from all indications the trade throughout the country are not overstocked, and from the outlook they will be short of goods even for the early fall, and unless there should be a change between this and the next 30 days, of which we see no indication, a large trade will be looked for in the Hardware trade for the coming season. Prices look firm, and in some cases there are indications of an upward tendency.

## Barb Wire.

The market is characterized by the firm tone to which reference was made in our last issue, with no important change in quotation. Manufacturers generally are full of orders, exceptionally so, for this time of year.

## Wire Nails.

While there has been no change in the market since our last report the firmness then referred to continues with a fair business. There is a disposition on the part of some makers to make an advance of 5 cents, but this cannot be regarded as accomplished. Quotations are on the basis of $2.30, at mill, for carload lots, and parcels from store in New York are selling at an advance of 15 to 20 cents on this price.

## Miscellaneous Prices.

A meeting of the manufacturers of Steel Goods was held last week in Cleveland, and the result of their conference was the adoption of some slight advance in the list of prices of goods which have been too low in proportion to others. There was some discussion as to the feasibility of forming an association which would control selling prices, but it was not considered desirable to attempt this and the market in these goods remains an open one. The ruling prices are referred to as extremely low, but in the existing condition of things it is not thought that they will be materially improved unless there is some important change in the prices of raw materials or an exceptionally favorable condition of general business. The following are the changes in list referred to above which were adopted, to go into effect June 25:

*Forks.*

2-tine, 3-tine and 4-tine Hay Forks, with 13-inch and shorter tines, advanced 25 cents per dozen when sold on 5½ feet handles, and advanced 50 cents per dozen when sold on 6 feet handles.

*Hoes.*

Toy, advance, 25 cents.
Riveted Socket and Shank, advance 25 cents.
All Mortar or Street Hoes, advance 50 cents.
Cotton Shank Hoes advance so they will list at $1 under Planter's Shank Hoes.

*Weed Hoes.*

Steel, 4 and 6 tooth, advance 50 cents.

*Hooks.*

Round, oval, flat, diamond and oval back, 4-prong Potato, all advanced 50 cents per dozen.
Round and oval, 5 and 6 prong Potato, advance $1.
Round and oval 4-prong Manure Hooks, advance $1.

Screw Hook and Strap Hinges and Heavy Hook Hinges have declined $\frac{5}{10}$ cent per pound

The Strap and T-Hinge market has not improved since our last report, and still further concessions are made by most of the manufacturers. This line of goods is thus again seriously demoralized, a regular quotation being discount 75 and 10 per cent.

No announcement of revised list prices of Hand Saws has yet been made, but the market for these goods is decidedly firm, in view of the recent consolidations, and the probability that prices will rule somewhat higher is generally conceded.

Machine Bolts are somewhat unsettled in price and quotations are slightly lower than they have been for some time.

In sympathy with the condition of the Lead market Shot is decidedly firm, and it is thought not unlikely that a further advance will soon be announced.

The market for Carriage Bolts may be referred to as in quite a satisfactory condition, prices being regularly maintained.

There is, as not infrequently happens at this time of the year, something of a weakness in the prices of Stebbins' Pattern Molasses Gates.

Owing to the difficulty of obtaining Loaded Shells, prices are somewhat firmer, though no change has been made in manufacturers' quotations. The manufacturers are, however, so loaded up with orders that it is difficult to obtain goods at all promptly, and buyers are fortunate if they can obtain the Shells at moderate advances from second hands.

The Haggard Wagon Spring Company, Lafayette, Ind., issue a circular descriptive of their Patent Bolster Springs and Wagon Tongue Supports. They print the following list of their Bolster Springs, subject to a discount of 60 per cent. off.

*Bolster Springs, Four Springs to the Set.*

| | | | | |
|---|---|---|---|---|
| No. 0, | capacity | 1000 | pounds | $6.00 |
| " 1 | " | 2000 | " | 7.00 |
| " 2 | " | 3000 | " | 8.00 |
| " 3 | " | 4000 | " | 9.00 |

Their Wagon Tongue Supports are subject to 50 and 10 per cent. discount from the list.

*Wagon Tongue Supports.*

| | |
|---|---|
| No. 0, Delivery Wagons | $2.00 |
| " 1, Ordinary Farm Wagons | 2.50 |
| " 2, Heavy Lumber Wagons | 3.00 |

The Bostwick & Burgess Mfg. Company, Norwalk, Ohio, send circulars illustrating the goods made by them. Among these may be mentioned the Calliope Whistle; Engineer's and Switchman's Puzzle; the Prince Sweeper and the No. 2 King Sweeper. The Sweepers are alluded to as being packed in cases of one dozen each, while Calliopes and Puzzles are packed in cases of two gross each. The following prices are announced:

| | | |
|---|---|---|
| Calliope Whistle | Per gross, | $6.00 |
| E. & S. Puzzle | " | 7.00 |
| Prince Sweeper | Per dozen, | 16.00 |
| No. 2 King Sweeper | " | 18.00 |

John Campbell, Manchester, N. H., manufacturer of Hardware Specialties, sends out illustrated cards showing the line of goods made by him. These consist of Hitching Posts, Hitching Post Caps, Standard Clothes Dryers, Eureka Clothes Dryers, Giant Trucks, Dumb Waiter Wheels, Stable Furniture, Wood Harness Pins, Hitching Weights and Dumb Bells. The goods are sold at the following discounts:

| | |
|---|---|
| Hitching Posts | 40 % |
| Hitching Post Caps | 40 and 10 % |
| Standard Clothes Dryers | 40 and 10 % |
| Eureka Clothes Dryers | 50 % |
| Giant Trucks | 40 % |
| Dumb Waiter Wheels | 50 % |
| Stable Furniture | 60 % |
| Wood Harness Pins | 40 % |
| Hitching Weights | 50 % |
| Dumb Bells | 50 % |

The Custer Beam Works, Marshall and Diamond streets, Philadelphia, Pa., quote the following discounts on the goods manufactured by them:

| | |
|---|---|
| Custer Beams | 33⅓ % |
| Custer Ice Tongs | 20 % |
| Dicks' Tool Holder | 20 % |

## Sheet and Bolt Copper, &c.

In sympathy with the price of Copper advances have been made in prices of manufactured Copper, such as Sheet and Bolt Copper, Copper Bottoms, Pits and Flats, &c. The above table is the revised quotations adopted June 27 by the associated manufacturers.

| Sizes of Sheets. | | 64 oz. and over. | 32 oz. and up to 64 oz. | 16 oz. and up to 32 oz. | 14 oz. and up to 16 oz. | 12 oz. and up to 14 oz. | 10 oz. and up to 12 oz. | 8 oz. and up to 10 oz. | Lighter than 8 oz. |
|---|---|---|---|---|---|---|---|---|---|
| | | Cents per lb. | Cents per lb. | Cents per lb. | Cents per lb. | Cents per lb. | Cents per lb. | Cents per lb. | Cents per lb. |
| Not wider than 30 in. | not longer than 72 in. | 25 | 25 | 25 | 26 | 27 | 28 | 31 | 33 |
| | longer than 72 in. | 25 | 25 | 25 | 26 | 28 | 30 | 34 | |
| Wider than 30 in., but not wider than 36 in. | not longer than 96 in. | 25 | 25 | 25 | 27 | 29 | 33 | 36 | |
| | longer than 96 in. | 25 | 25 | 26 | 28 | 30 | 34 | 38 | |
| Wider than 36 in., but not wider than 48 in. | not longer than 96 in. | 25 | 25 | 27 | 29 | 31 | 35 | | |
| | longer than 96 in. | 25 | 25 | 28 | 30 | 32 | 36 | | |
| Wider than 48 in., but not wider than 60 in. | not longer than 96 in. | 25 | 25 | 30 | 32 | 37 | | | |
| | longer than 96 in. | 25 | 26 | 31 | | | | | |
| Wider than 60 in., but not wider than 84 in. | not longer than 96 in. | 26 | 27 | | | | | | |
| | longer than 96 in. | 27 | 28 | | | | | | |
| Wider than 84 in. | | 28 | 30 | | | | | | |

Bolt Copper, 3-8 inches in diameter and over, per pound, 25 cents.

The following advanced prices of Copper Bottoms, Pits and Flats and Planished Copper also went into effect June 27:

*Copper Bottoms, Pits and Flats.*

| | Cents. Per pound. |
|---|---|
| 14-ounce to square foot and heavier | 29 |
| 12-ounce and up to 14-ounce to square foot | 30 |
| 10-ounce and up to 12-ounce | 32 |

Circles less than 8 inches diameter, 2 cents per pound additional. Circles over 13 inches diameter are not classed as Copper Bottoms.

*Planished Copper.*

14 x 48.

| | Cents. Per pound. |
|---|---|
| 14 and 16-ounce and heavier | 36 |
| By the case | 35 |
| 12-ounce and lighter | 38 |
| By the case | 37 |

*Boiler Sizes.*

7-inch, 14 x 52. 8-inch, 14 x 56. 9-inch, 14 x 60.

| | Cents. Per pound. |
|---|---|
| 14 and 16-ounce and heavier | 36 |
| By the case | 35 |
| (And all sizes not over 20 inches wide.) | |
| 20 x 48 and 30 x 60. | |
| 14 and 16-ounce and heavier | 39 |
| 12-ounce | 42 |

An advance of 2 cents per pound in the price of Copper Tubing and of 1 cent per pound in the price of Brass Tubing was made June 30.

## July 4 and 5.

A movement among the Hardware trade of this city is under way for the closing of offices and stores July 4 and 5. At the time of going to press the canvass has not been entirely completed, but the movement has met with very general approval, as indicated in the list given below of houses who have given their adhesion to it, and there are others, doubtless, who will be pleased to do so. It will also be observed that a similar movement will be carried into effect in Boston and probably in other cities. The following is the paper

which has been circulated in this city and the signatures thus far obtained:

The undersigned firms are in favor of closing offices and stores on July 4 and 5.

Saturday, July 5, being a half-holiday, it is thought best to give both employers and employed the advantage of two days' recreation:

HAWLEY BROS. HARDWARE CO.,
DUNHAM, CARRIGAN & HAYDEN CO.,
KEARNEY & FOOTE CO.,
J. C. MCCARTY & CO.
SUHPLESS, DUNN & ALDER,
GREENE, TWEED & CO.
THE STANLEY WORKS,
WIEBUSCH & HILGER,
TOPPING & FOX,
UNION NUT CO.,
WELSH & LEA,
C. E. JENNINGS & CO.,
READING HDW. CO.,
MALLORY - WHEELER CO.,
PECK, STOW & WILCOX CO.,
ALFRED FIELD & CO.,
JOHN H. GRAHAM & CO.,
HENRY B. NEWHALL CO.,
LIVINGSTON NAIL CO.,
IOWA BARB WIRE CO.,
HERMANN BOKER &CO.
HUNTINGTON HOPKINS CO.,
W. & S. TIEBOUT,
ROSS & FULLER ASS'N,
PATTERSON BROS.,
HUMASON & BECKLEY MFG. CO.,
STEPHENS & CO.,
WM. ROGERS MFG. CO.,
MERIDEN CUTLERY CO.
UNDERHILL, CLINCH & CO.,
VAN WAGNER & WILLIAMS CO.,
P. & F. CORBIN,
HARPER & REYNOLDS CO.,
TURNER, DAY & WOOLWORTH MFG. CO.,
WOOLLEY & MOORE CO.,
HARMON & DIXON,
C. F. GUYON CO.,
NAYLOR & FLACK.

## Marking Prices.

The first competition covers approved methods by which the merchant accommodates his price-lists, catalogues, &c., having them convenient of access so that he is enabled to refer to any desired list, and to obtain information in regard to any of the goods to which they relate. The second competition, which has not yet been decided, relates to the methods by which a buyer manages quotations so that in connection with his price-lists he is enabled to ascertain the prices of goods. The third competition carries the matter one step farther and treats upon approved ways by which salesmen are informed as to the selling prices of goods, and it thus relates to the store as distinguished from the office management of prices. A little consideration will make it plain that this is a subject into which contributors may enter with a good deal of detail, as there are different methods in use and the different kinds of goods seem naturally to call for varying treatment. It thus brings up the arrangement of price books and price cards, and the methods of marking articles or packages or the shelving or other receptacles in which they are contained. It is hoped that merchants who have what they consider desirable methods of accomplishing the matter under consideration will send in their contributions telling how they do it. A general response to this suggestion will result in bringing out information which cannot fail to be of very general interest.

But as relating to this whole subject we take pleasure in laying before our readers the following letter of inquiry, in which our correspondent gives expression to some of the perplexities which he encounters. It may be that some of our readers are in a position to enlighten him in regard to these matters:

There are some questions I want answered and objections got rid of in regard to marking prices, and in view of Hardware Competition No. 3, on which I suppose a host of able merchants are now at work, as it closes July 31, it may be that some of your readers who have solved these same questions satisfactorily to themselves can help me out. I start on the supposition that all have a cost mark and that the cost of all goods is marked. My first question is:

1. Where is the best place to mark goods? On the articles, or using price-lists or books? I find in favor of price-lists or books that prices are for my own use and not for my competitors; that they save time in marking new goods; that they save time in knowing prices when buying goods; that the costs of the same classes of goods are together. I find, in favor of marking on the article or box they are sold from, that new clerks or porters cannot understand the arrangement of price-lists or books; that lists get dirty and unintelligible; that new costs often fail to get on the price-lists; that more than one person often wants to use the list at the same time; that goods on hand of the same kind as new ones coming in can be remarked and the original cost known when working them off.

2. If prices are marked on goods, should the selling price be in plain figures or ciphers? I find, in favor of plain figures, that in rush times the customers can know the price of goods by looking, without calling on a busy clerk; that the store becomes automatic, the customer waiting largely on himself, and the customers understand that there is but one price for all and are consequently satisfied. In favor of ciphers I find my competitor cannot see my selling price and make my customer dissatisfied or cut 5 or 10 cents to ruin my trade. If a hard customer has cut me down on the price of a Stove I can make up my profits on the furniture; that customers do not get in the habit of handling and deranging goods; that I have more thorough control of my business.

3. What is the best plan to follow in making a cost mark? Some use figures, some letters that spell something or have no reference to spelling; some use ciphers based on a square or circle; some based on the decimal plan.

4. The best system of marking cost and selling price. Is it better to average up the cost of freight, boxing, cartage, &c., on a class of goods, as Shelf Hardware or Tinware or Paints, and always add the same per cent. to the cost in marking, or to figure these costs on each bill?

5. Is it best to mark the cost of goods and the selling price both by the single article and dozen, or only by the single one? If prices are marked on price-lists, what is the best universal arrangement and order of selling price, size, cost, number, gauge, name, weight, &c., having all price-lists or books arranged in the same order?

7. Should price-lists be kept near the goods to which they refer, or in some place all together?

8. Should a separate arrangement be kept up by which to enter the cost of goods at the jobbers' or factory, the cost of boxing, cartage, freight, &c., being added, for the use of the buyer?

9. If so, which is the best arrangement, book, price-lists, cards, slips or some way not suggested here?

10. Is it desirable to have quotations on goods entered in the same arrangement with the cost of goods bought, or to keep them separate?

11. If both are entered in the same arrangement, what marks are used to distinguish quotation from cost?

12. What is the best plan to keep track of duplicate stock—having marks on boxes, goods, price-lists or books referring to section where duplicate stock is kept, or having book, cards or other arrangement for the purpose without regard to where prices are marked?

13. Is it desirable to observe the same system in marking Cutlery, Bar Iron, Tinware, Paints and Oils, Agricultural Goods, &c.

14. If so, what is the most desirable system?

15. What are the best individual ways to be followed with the different lines mentioned if a system is not carried out in marking all goods?

It will, however, probably occur to our readers that it will not be feasible, in a contribution entered in Competition No. 3, to give a full answer to all these questions, which would obviously make the paper unnecessarily long. If competitors will simply give a description of methods which satisfactorily accomplish the end in view it is all that can be expected. There are doubtless many Hardwaremen whose methods of marking prices are entirely satisfactory, and an explanation of the way in which they do it is what is desired.

## Items.

The establishment of Barker, Rose & Gray, Elmira, N. Y., was entirely destroyed by fire on Monday, June 30. The fire was due to the spilling of some Japan dye near a lantern in the basement, the light from which ignited the dye, a frightful explosing ensuing. Two of the clerks, one of whom was drawing the dye, were seriously injured, but they succeeded in escaping from the burning building, as did the other employees of the firm. The stock of Barker, Rose & Gray was insured for $100,000.

The Gate City Stone Filter Company, 46 Murray street, New York, allude to the improvement which they are now making in the designs and decorations of their China Filters; also to the addition of the Ice Chamber in the Stone Jar Filters as having proved to be very beneficial and popular. They advise us that their orders, including heavy export orders, are beyond their capacity, but they expect to be able to meet the demand by additional facilities within the next two or three weeks.

Our readers will observe the advertisement on page 11, in which the Cincinnati Mfg. Company, Cincinnati, Ohio, call attention to their line of Brushes and Wire Goods. Our readers will remember the paragraph in our last issue relating to this enterprise under their present auspices.

We are advised that the Commissioner of Patents has decided that Jas. F. Winchell, of Springfield, Ohio, is the first and rightful inventor of the single crusher device in Grinding Mills for crushing ear corn and other substances. This is an important feature in Grinding Mills, and there has been proceedings in interference between the Foos Mfg. Company, to whom Mr. Winchell assigned the invention, and Thos. Roberts, of Springfield, Ohio, a manufacturer of Mills using the device, and who claimed to be the inventor. The case was decided first by the Examiner in Interferences in favor of Winchell, but upon appeal to the Board of Examiners this was reversed and decision rendered in favor of Roberts, but the Commissioner, whose decision is final in matters of this kind, reverses the last decision and declares Mr. Winchell the true inventor, and that the patent issued to him is valid.

Under date of June 25 Albert S. King announces the dissolution of the firm of King, O'Connor & Co., Baltimore, Md., by limitation, and states that in the future he will be identified with the Jones Hollow Ware Company, of that city, giving special attention to the management of their Southern interests.

C. F. Guyon Company, 99 Reade street, New York, have been appointed selling agents for the sale of the Gem Screw Plates manufactured by W. S. Jones & Co., Watkins, N. Y.

# Prize Competition.*

## No. 1.

## Care of Price-Lists.

As was announced in our last issue the first prize in the first Hardware Competition was awarded to Fred. Macey, Grand Rapids, Mich. The method explained by Mr. Macey is similar to many of which descriptions were received, in that as a general rule price-lists are arranged without regard to the kind of goods to which they relate, with an index of goods referring to the different catalogues and circulars. Another system adopted by many of the competitors classified the lists and circulars according to the kinds of goods represented in them, such classification being more or less extended and detailed, according to the character of the business and the views of the buyer. Of the details of arrangement of such a system we will give a description in a later issue. In the present article a description is given of Mr. Macey's method, with a few unimportant modifications in details to render it better adapted to the purposes of most Hardwaremen. In presenting this matter Mr. Macey refers first to the importance of having a system which will take care of the many catalogues, circulars, etc., which are constantly being received.

The need of system in the care of price-lists, catalogues, discount sheets, circulars and other printed matter coming into the office of any business house, whether it be manufacturing or mercantile, has long been felt by both buyer and salesman. This is owing to the methods used by both manufacturers and jobbers in calling the attention of buyers to their products and wares by means of catalogues, circulars, pamphlets or other printed matter. If a salesman calls he invariably leaves his card or catalogue. An advertisement in the trade papers generally ends with a request to send for a catalogue if further information is desired. Every new invention or change in design is heralded to the trade in all parts of the country by means of thousands of circular letters or other printed matter. There can be no question as to the value of these to both buyer and salesman, but there has always been more or less doubt as to the best system of filing them for future reference. A proper system for the disposing of the hundreds of catalogues, circulars, price-lists and other printed matter entering an office will enable its user to do three things.

1. Decide at once just what is desirable to keep and what is not.

2. When information on any subject is desired to refer to just such catalogues and circulars containing it.

3. When any particular catalogue is desired to select it at once.

How to obtain these results accurately, rapidly, cheaply and practically, has been a subject to which Mr. Macey has given some attention; and after experimenting with both the pigeon-hole and portfolio systems, he was finally led to the adoption of the scheme herewith described. To make the working of the system plain to the reader the accompanying illustrations of desk, files, shelving and other articles used in connection with it are given.

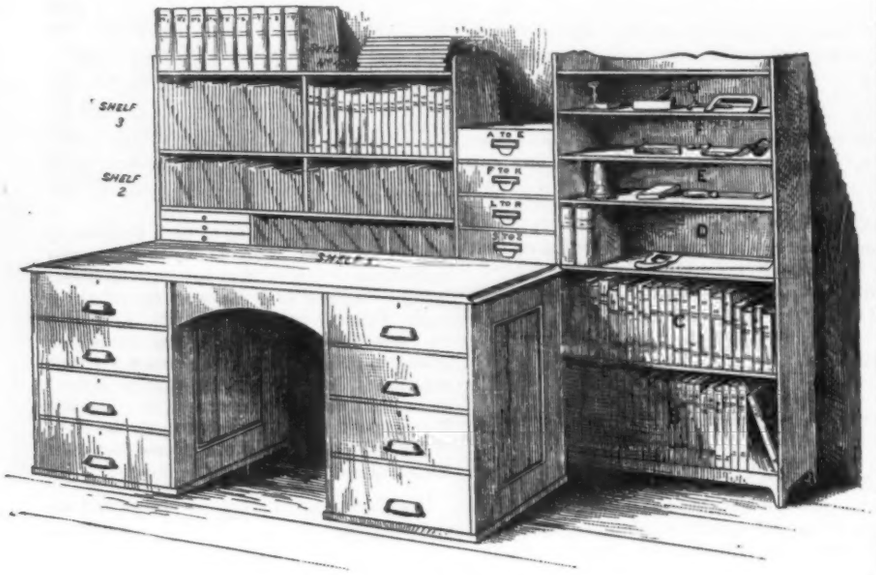



*Fig. 1.—Desk, Shelving, &c.*

The desk represented in Fig. 1 is an ordinary flat top. At the back of the desk, not on it, are a number of shelves running lengthwise of the desk and so placed that the lower shelf is 2 inches above the top of the desk. These shelves are within easy reach and are placed far enough apart to admit of ordinary catalogues standing erect when placed on end. The bottom shelf is 7 inches in the clear, the second shelf 11 inches and the third shelf 15 inches, provision being thus made for pamphlets and catalogues of various sizes. As indicated in the illustration, it will be observed that the two lower shelves are occupied by comparatively thin lists, while the top shelf is used for binding cases referred to below, and also for *The Iron Age*. To the right of the shelving is an ordinary four-drawer Shannon file, to contain loose circulars and other small printed matter which cannot be well accommodated in the shelving. To the right of the desk, it will be observed, there is a book case, the lower part of which contains bound catalogues with a space in it for index and price books, with upper shelves for samples of goods.

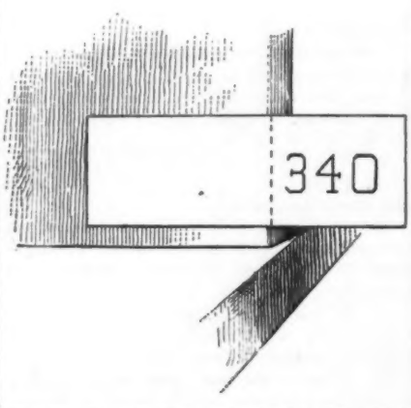



*Fig. 2.—Tag, Full Size, Applied to Pamphlet.*

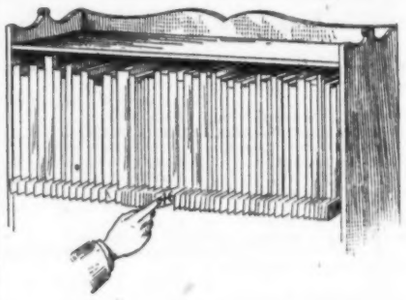


*Fig. 3.—Numbered Tag Attached to Bottom of Price-Lists.*

To file a catalogue and obtain the results desired, it was found necessary to have several hundred small pieces of strong ledger paper cut to a size 2¼ inches long and ¾ inches wide and numbered as shown in Fig. 2. It is obvious that these slips, if deemed necessary, can be made of paper and cloth, but Mr. Macey advises us that slips made of ledger paper will be found very durable and will last a long time.

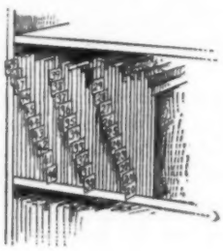


*Fig. 4.—Numbered Tag at Regular Intervals.*

These slips are used for numbering the smaller catalogues, the larger ones being numbered on the back. The object of having the numbers printed on the ends of the slips is to allow the catalogues too small to receive a number on the back to have the number pasted on one side, so that the numbered end projects. The number, it may be added, may be placed on one or both sides of the slip, having it on both sides somewhat facilitating reference. These number may be attached to the bottom of each pamphlet as shown in Fig. 3, when any number may be easily found by running the finger along and bending back the projecting slip until the desired number is brought to view. Of course the numbers are arranged in numeri-

*Copyrighted, 1890, by David Williams.

cal order and pasted on the catalogues so that if printed only on one side the numbered sides face the same direction. It may, however, be preferred to arrange these tags at varying distances from the bottom, so as to leave the numbers in view as represented in Fig. 4. In adopting this arrangement it may be well to begin each series with numbers ending in 0, the subsequent numbers in the decade being placed at farther distances from the bottom in regular order. Thus 340 would be placed on the bottom of the pamphlet; 341, ¼ of an inch from the bottom of the next pamphlet; 342, 1½ inches from the bottom of the next pamphlet, and so on until 350 is reached, which begins a new series. In this way, with numbers on the back of bound catalogues and tags attached to the smaller lists it is obvious that with due regard to the arrangement of these numbers on the shelving any desired list or catalogue can be conveniently found.

To dispose of the circulars and printed matter of less size it was found expedient to use Shannon files and binding cases, which are shown in Fig. 1, each supplied with an alphabetical index, the circulars being filed topically according to the class of business. The circulars and smaller class of printed matter are first filed in one of the drawers of the Shannon file until it is filled when they are transferred to one of the binding cases, which is properly numbered and placed in numerical order on the top shelf ready for future use.

The book used by Mr. Macey for recording and indexing is furnished with two indexes, one for the firm names and the numbers of the catalogues, and the other a classified goods index. The index to manufacturers lists is ruled as shown below, Fig. 5, which illustrates the manner in which it is filled out. The index to the different kinds of goods is shown in Fig. 6. Referring, for example, to page 210 of the book a list of the manufacturers and jobbers who handle Cutlery will be found, also the number of their catalogues and the binding cases containing their circulars. The form in which this record is preserved is shown in Fig. 7. It is obvious that these indexes may be in one volume or two as may be preferred.

| NAME AND RESIDENCE. | BUSINESS. | NUMBER. |
|---|---|---|
| Wilson, S. & Co New York | Cutlery | 340 |
| Watson, S W. Chicago | Wheelbarrows. | 351 |

*Fig. 5.—Index to Manufacturers' Lists.*

| ARTICLE | PAGE |
|---|---|
| Cutlery | 210 |
| Chain | 246 |

*Fig 6.—Index to Classification.*

Having given this outline description of the system it will aid some of our readers to understand it fully if an application is made showing its use. This is thus explained by Mr. Macey:

Suppose a catalogue from S. Wilson, New York, has just been received. The first point to determine is does it relate to the buyer's business; if not it is either returned to the sender or handed to some person who can use it; if it does he turns to the first index, and looks over the list of names under W to see if there is not one already on file. If so the catalogue is disposed of in the same manner as if it did not relate to his business, but if not he takes the numbered slip next in numerical order, attaches it to the catalogue, as in Fig. 2, turns to letter W of the first index and enters it, together with its number, Fig. 5. It is again indexed according to its subject matter, which in this particular case is Cutlery, together with the page of the book in which are entered the names of all other manufacturers and jobbers engaged in the same line of business, with the numbers of their catalogues, Figs. 6 and 7. If a circular is to be disposed of it is indexed in a manner similar to a catalogue, but is referred to in the book by the number of the binding case, followed by the letter in that case under which it is placed. For instance, in Fig. 7, 4 C placed after S. Wilson, New York, means that in binding case No. 4 and under letter C there is a circular letter or other printed matter from the above firm relating to Cutlery. It is to be understood that circular 4 C is too large to be attached to catalogue No. 340, it being always desirable to keep the catalogue, circulars, &c., of the same business house together as much as possible. Again, when the catalogue of any particular firm is desired, it can be found by simply turning to the first index, finding its number, and taking it from the shelf or file as the case may be. Again, a buyer or salesman is looking up the subject of Cutlery. He first turns to the subject index, and under letter C finds that Cutlery is recorded on page 210 of the book Fig. 6. Here he finds that by looking up catalogues Nos. 42, 200, 301, 340 and circulars filed under 4 C, 5 C and 6 C he will find in each of them matter pertaining to Cutlery. This is easily done by means of the projecting slips, as shown in Figs. 3 and 4, and referring to the binding cases, which are arranged in numerical order on shelf No. 4, Fig. 1. When the information has been obtained they are again returned to their respective places ready for future use.

In regard to this system and the expense of an outfit, Mr. Macey adds:

That this system is accurate there can be no doubt; that it takes time to start it, especially so after a large number of catalogues have accumulated, may to some extent be true; yet after once started it requires but little time and the time saved in its use after it is once established more than pays for the extra labor taken in the beginning. The cost of an outfit for a system like the one just described will, of course, vary according to the size of the business and the taste of the user. The shelving may cost anywhere from 25 cents up. The numbered slips can be had from any blank book manufacturer at a trifling cost. The Shannon binding case, includ-

| ARTICLE. | DATE | NAME AND RESIDENCE. | DISPOSAL. | REMARKS. |
|---|---|---|---|---|
| Cutlery | 5-20-89 | C. F. Baxter Chicago | 42 | |
| | 8-1-89 | S. Smiles Sheffield | 200-6c | |
| | 4-2-90 | W. Williams Phila. | 301-5c | |
| | 5-26-90 | S Wilson Newark | 340-4c | |

*Fig. 7.—Specimen of Classified Index With References to Price-Lists.*

ing an index for each, will not exceed 50 cents a piece, and as each case will easily hold 250 to 300 two-page circulars, the expense here is very small. The special blank book for indexing and recording is the most expensive feature of the system. The price of such a book will be governed by its size, quality of paper and style of binding, but as such a book will last for years and can be ruled with a view to recording quotations and cost of goods it will be found a profitable investment. The aim of the writer in adopting the system here explained was to have a system that was accurate, compact, rapid, cheap and practical. How well it fulfills its mission the reader must judge.

### Catalogues, Price-Lists, &c.

Frank E. Fitts, successor to Geo. Dunbar & Co., 74 to 76 Pearl street, Boston, Mass., sends out a price-list devoted to Railroad, Steamship and Mill Supplies. These consist of Leather and Rubber Belting, Rubber Hose, Oilers, Waste, Fire Buckets, Self-closing Oily Waste Cans, Mill Baskets, Box Lanterns, Barrows, &c.

The Stevens' Arms and Tool Company, Chicopee Falls, Mass., manufacturers of Stevens' Rifles, Shot Guns, Reloading Tools, Sights, Shells and fine Machinists' Tools, issue illustrated catalogue and price-list No. 4. The Stevens' Arms are referred as possessing accuracy, simplicity, portability, durability and compactness. They also send a smaller catalogue of their fine Mechanical Tools, with illustrations and list prices of the same for the Hardware Trade.

The Indianapolis Bolt and Machine Works, O. R. Olsen, proprietor, Indianapolis, Ind., issue a convenient illustrated price-list, showing a line of Adjustable Drop Hangings, Face Couplings, finished pulleys, Saw Mandrels, Heavy Emery Grinder, Swing Saws, Nuts, Bolts, &c. These articles are each referred to as possessing merits which will commend them to those interested in this kind of machinery.

The Enterprise Mfg. Company, St. Paul, Minn., and Akron, Ohio, issue an illustrated catalogue and price-list devoted to Artificial Fish Baits. They call attention to the merits of their Luminous Bait, in the manufacture of which we are advised they combine certain phosphoric chemicals, thus rendering the Bait luminous, and making it, they claim, particularly desirable for dark day fishing. They also manufacture Saddlery Hardware, consisting of Rosettes, Ornaments and the Eagle Brand Sweat Pads.

The Hartman Manufacturing Company, Beaver Falls, Pa., issue a catalogue descriptive of the Hartman Specialties. Particular attention is directed to their Steel Picket Fence and Gates, Automatic Drive Gates, Tree and Flower Guards, and Flexible Steel and Brass Wire Door Mats. The catalogue is convenient in size and arrangement.

The Overman Wheel Company, office and factory Chicopee Falls, Mass., with branch houses at Boston and Washington, send a very attractive catalogue illustrating their Victor Bicycles for 1890. They show the various styles of wheels manufactured by them, as well as the several parts in detail. A. G. Spalding & Bros. are their special agents in New York, Chicago and Philadelphia.

J. A. Dubuar Mfg. Company, Northville, Mich., manufacturers of Iron Strapped Blocks, Rope Strapped Blocks, Iron Blocks, Sheaves, Mast Hoops, Deck Plugs, Wheelbarrows, Garden Hose Reels, &c., issue a price-list descriptive of these goods. We are advised they also manufacture Screen Doors, and expect to make it a prominent feature of their business.

Caverhill, Learmout & Co., Montreal, wholesale dealers in Arms and Ammunition, send us their illustrated catalogue for 1890–91. This is particularly noticeable for its high class of typographical work and the attractive appearance of the catalogue. We notice among other goods Winchester Repeating Shot Guns, Merwin, Hulburt & Co., Junior Rifles, Winchester Repeating Rifles, and other goods familiar in this country.

Walter Coleman & Sons, Providence, R. I., issue a comprehensive catalogue and price-list, of 95 pages, for 1890, illustrating the large line of Tackle Blocks, Iron and Lignumvitæ Sheaves, &c., manufactured by them. Attention is directed to their Crescent Edge Blocks, also their Brass Yacht Blocks, both of which they are now introducing. The lists and illustrations are very complete, and the catalogue will doubtless occupy a prominent place among the price-lists of the trade interested in these goods.

The Samson Cordage Works, of Boston, have issued a new catalogue and price-list of their Solid Braided Cord, and they are now sending it to the trade, together with some very neat sets of samples. They have been putting in new machinery, which is greatly improving the processes of manufacture, and their catalogue sets forth some new specialties which they think will be acceptable to the trade.

## REVIEW OF THE WHOLESALE MARKET IN PAINTS AND OILS.

*It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.*

### Paints and Colors.

The distribution of the more staple lines of Paints and Colors by jobbers has been very fair the past week, although showing some shrinkage in volume, as might be expected at this season of the year. Manufacturers are having practically the same experience as the jobbers, the latter seeming to gauge their operations by the current distribution to a great extent in the absence of incentive for putting in supplies for future use. Some irregularity in the price of White Lead at second hands is still noticeable, and the California competitor of the "trust" is yet aggressive. Otherwise, however, values show remarkable steadiness all along the line, and there is nothing visible in the general surroundings suggestive of probable important fluctuations in the near future.

*White Lead.*—The product of the California competitor, whose operations in the East were chiefly responsible for the late reduction in prices of White Lead by corroders connected with the National Lead Trust, is still freely offering on this market at 6¢ ℔ pound. The quantity available appears to be fairly large; sufficient to keep the market disturbed, at all events. Manufacturers of the cheaper class of pigment (Mixed Leads) are somewhat handicapped by the high cost of Pig Lead and dry White Lead, yet their productions are still being used to a comparatively large extent, almost exclusively, in fact, on cheap work. Corroders have made no change in their prices and are known to have refused to make any allowance to customers who complained at the discrepancy between their's (the corroders) and the jobbers' prices. The latter rarely exceed 6⅞¢ here, and range frem 6¼¢ down to as low as 6¢ in cases where a good bill of other supplies may be involved. The Mixed Leads sell at 4½¢ @ 5½¢, in small lots, according to reputation of brand.

*Red Lead and Litharge.*—There is about the usual demand for these goods and prices remain unchanged and steady for the standard brands.

*Zincs.*—The position of affairs at the sources of supply of crude material is still the foundation for very firm prices for American Oxide and former prices are adhered to. The demand is of good proportions for the season. Foreign brands are without change as to prices and meet with about the usual sale.

*Colors, &c.*—Transactions in this line are of the routine character for the season, and the movement of the leading staples is fairly free. Prices are quite steady all along the line, with positive firmness conspicuous in some instances, particularly on Quicksilver Vermilion. There is no remarkable change in the condition of the market for Chalk, Whiting, Paris White or Clays.

### Oils and Turpentine.

General trade has been rather slow the past week, and no striking changes in values or in the situation from the supply point of view have come to the surface. Export buyers manifest as indifferent interest as the home trade does, the latter, it may be noted, confining purchases to the demands of immediate wants. None of the leading commodities are offered with any particular urgency, however, and with an insignificant exception here and there prices remain remarkably steady for so quiet a market. Supplies of Spirits Turpentine have increased considerably, with the effect of causing a further reduction in price.

*Linseed Oil.*—There is no change in the local market for this article. Reports have had circulation in Boston that offers were made to sell at 58¢ there for forward delivery, but local crushers state that they have not authorized any offers of futures here or elsewhere, and that prospects are too uncertain for any more in that direction. Current distribution runs fairly, and prices are steady for both local and out of town brands.

*Lard Oil.*—Raw material is cheaper, and modified prices for the oil are therefore considered probable ere long. Buyers gauge their operations accordingly, leaving the market in a rather dull condition. As yet, however, no lower price than 49¢ is quoted on prime stock of either city or out of town brands, and 50¢ is generally quoted.

*Cotton Seed Oils.*—Very little business has been effected here, and, apart from occasional inquiries by exporters for "off" grade Summer Yellow, the demand is slow. Some business has been done in the South at prices equivalent to 32¢ in New York for Prime Crude. Local holders quote practically the same prices that ruled a week ago.

*Menhaden Oils.*—Arrivals of new crude have been rather freer, but of merely fair total, and with demand slow prices are a trifle weaker. The finest grade will not bring over 24¢, and for good merchantable quality 23¢ seems to be extreme value. The manufactured prices are rather slow, with prices in buyers' favor.

*Sperm and Whale Oils.*—The position of the crude products has undergone no change, there being little demand and no important arrivals. The manufactured oils are steady as to prices, but selling in a moderate way only.

*Spirits Turpentine.*—Prices were as high as 42¢ early in the week, under the support of strong Southern advices and some speculative trading. Free receipts that increased the spot supply to about 1,800 bbls. have caused a reaction, however, late sales having been made at 40½¢ for "regulars" and 41¢ for "machines."

### Improvements in Clipping Machines.

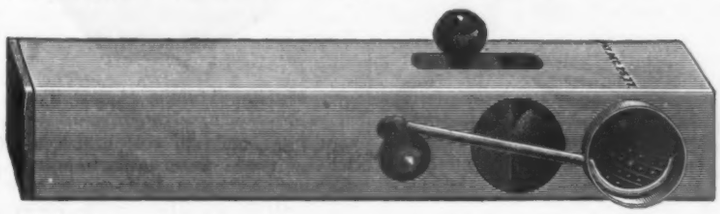
The American Shearer Mfg. Company, Nashua, N. H., manufacturers of horse clipping, sheep shearing and barbers' clipping machines, are making an adjustable comb and an instantaneous removable sweat guard for their hair clippers, as shown in accompanying cut. The comb is referred to as having a center balance on the handle to adjust the comb to the cutter, also a patent adjustable spring in the movable lever to increase the strength of the spring. The spring is alluded to as being made of the best pianoforte wire. The object of the sweat guard is to facilitate cutting the hair in summer time,

*Comb and Sweat Guard on Clippers.*

when perspiration is apt to prevent smooth cutting. We are advised that the sweat guard comes with every clipper free.

### Nutmeg Grater.

The Standard Company, 57 Haverhill street, Boston, Mass., are introducing



*Nutmeg Grater.*

their new nutmeg grater, as illustrated herewith. It has a box in the handle for holding nutmegs, which makes it very complete, and the grating mechanism has been improved. We are advised these changes do not add to the cost of the article.

### Stearns' New Snap Flask.

E. C. Stearns & Co., of Syracuse, N. Y., are introducing a ready made snap flask, as illustrated herewith, Fig. 1. The fastenings are referred to as having large V-shaped pins with corresponding bearings, designed to insure a level lift of the cope, enabling less experienced help to mold difficult patterns. Fig. 2 represents an enlarged view of the pins and guides at each end of the flask. The brass screw A is designed to take up any looseness or wear in the pins and the clasping screw B to hold the parts together. The flasks are described as being made of whitewood, light in weight, yet stiff and strong, the edges being bound with iron. They are made in 28 sizes, from 9 x 13 to 12 x 19. Metal furnishings only can be procured by parties desiring to make flasks themselves.

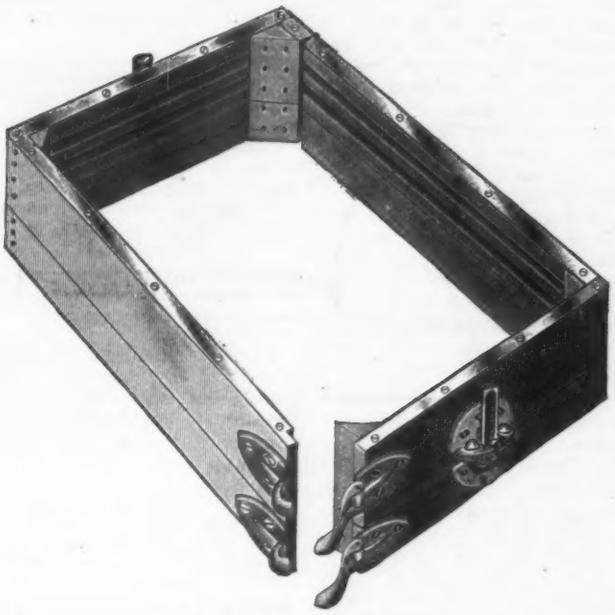


*Fig. 1.—Stearns' Snap Flask.*

*Fig. 2.—Enlarged View of Guides.*

### Czar Elastic Horseshoe Cushion.

The New York Belting and Packing Company, 15 Park Row, New York, are introducing the Czar Elastic Horseshoe Cushion, as illustrated herewith. The cushion is to remedy lameness and other ailments of horses' feet, which in nearly all cases is the result, we are advised, of the jar and hammering received in traveling on paved streets and macadamized roads. The cushion is made of solid rubber, and is elastic. It is placed between the hoof and the shoe, the object being to overcome all concussion, and enable the horse to travel with greater ease than when shod by the old method. The Czar cushion is alluded to as a preventive and cure for tender feet, corns, quarter cracks, sand cracks, split hoofs, hard, dry, brittle and contracted feet. The point is made that there is no pressure on the frog of the foot. The beveled flange is intended to prevent the balling of snow, picking up and throwing dirt, gravel or snow in the face of the driver. One cushion is expected to outlast two or more shoes. The cushion is ¼ inch thick on the inside edge, and

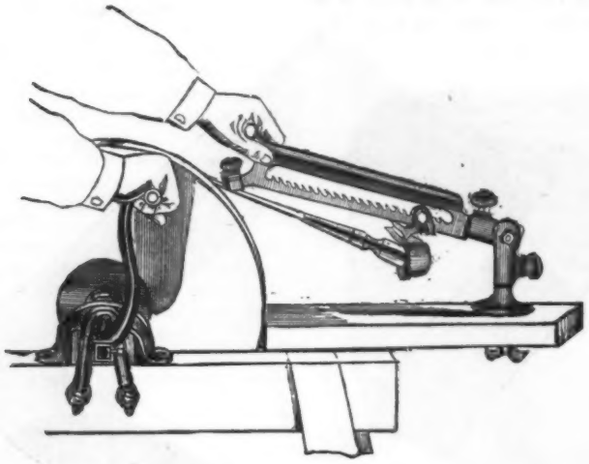
*Horseshoe Cushion.*

tapers down to ⅛ inch on the outside. The flange on the inside edge extends up the thickness of the shoe, beveled to a thin edge. This short description of dimensions will convey the idea that the cushion is not clumsy.

### Dick's Patent Tool Holder.

Samuel Ford, the Custer Beam Works, Marshall and Diamond streets, Philadelphia, Pa., are introducing Dick's Patent Tool Holder, as illustrated herewith. The holder is alluded to as holding tools either square or on any angle and bevel required. The point is made that tools are not fast-

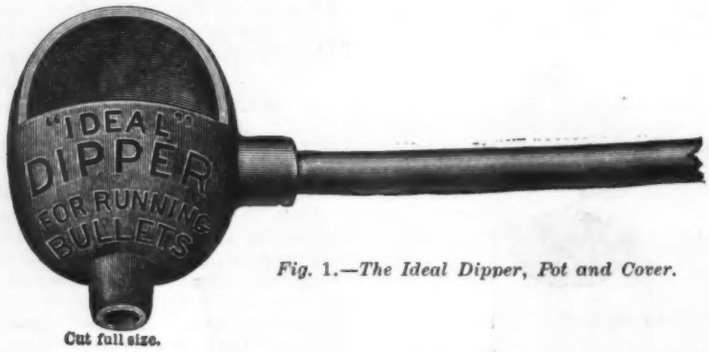
ened to the holder, but the operator can remove them for examination and replace them in the same position. Reference is made to the fact that the holder can be set to move the tool any distance across the face of the stone, and that it successfully holds tools from 1¼ inches to 20 inches long, and from ¼ inch to 8 inches wide. It is designed to hold all kinds of chisels, plane bits, beveled bits, hatchets, gouges, &c. This holder is the invention of Alex. H. Dick, by whom it has been patented.



*Dick's Patent Tool Holder.*

### The Ideal Dipper.

The Ideal Mfg. Company, New Haven, Conn., are introducing the Ideal dipper, pot and cover, as illustrated herewith, Fig. 1, for molding bullets and for the use of plumbers, jewelers and others who have occasion to handle molten metal. The object of the device is to provide a melting ladle with which molten metal can be manufactured without spilling; also that the metal entering the mold may be free from dross or slag. The body part of the dipper is oval, with the upper rear quarter cut away to receive the metal. The nozzle projects upward and outward from the dipper, the opening to which is described as being below the level at which the metal stands when the dipper is filled; the outer end of opening is, however, entirely above such level. The result of this arrangement is alluded to as overcoming the liability of spilling the metal; also preventing the dross or slag from entering the nozzle, as the entrance is below the dross, which floats at the top. The extremity of the nozzle is chamfered or shaped so as to fit the ingate plate of the mold engaging closely with it. The dipper is held with the nozzle above the level of its contents, the mold being connected while in that position. The dipper with mold thus connected is quickly turned to a vertical position, the metal being driven by the pressure of the metal in the dipper quickly fills the mold, expelling the air. The result is described as a casting of greater density, perfection and regularity of weight, free from air holes, than can be obtained with an open dipper. Fig. 2 is designed to represent one of the most difficult bullets that can be cast under pressure, the acute angles and corners being secured by this method.




Cut full size.

*Fig. 1.—The Ideal Dipper, Pot and Cover.*

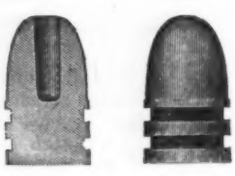


*Fig. 2.—Difficult Bullets Run with the Ideal Dipper.*

### The Blair Patent Husking Pin.

Mr. E. Blair, of Bucyrus, Ohio, is manufacturing for 1890 a new husker, No. 165. This is similar in construction to that put upon the market several years since, with the exception that what is termed a finger cot of leather is added, as shown in Fig. 1. A still further improvement is shown in Fig. 2, consisting of a thumb piece attachment. The manufacturer alludes to these attachments as being made of the best leather known for the purpose, and are protected by heavy tin disks. We are advised that the sale of these goods thus far this season has been very satisfactory.

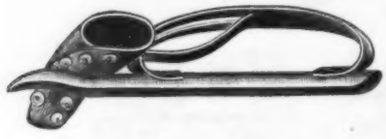


*Fig. 1.—Blair's No. 165 Husker.*

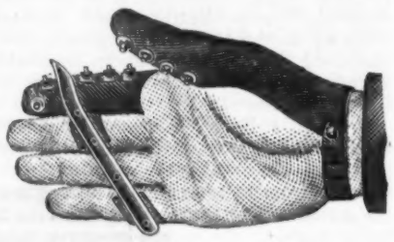


*Fig. 2.—Thumb Piece Attached.*

### Triumph Hollow Ware.

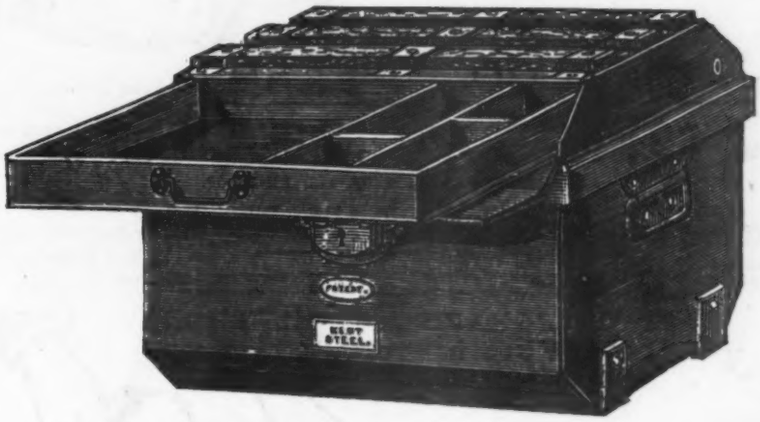
The Patton Mfg. Company, Columbus, Ohio, are introducing their Triumph Hollow Ware, as illustrated herewith. It consists of pots, kettles, tea kettles, spiders and griddles, enameled inside, and has their new top and side stop bails. These stop bails are alluded to as forming a complete check which is intended to prevent any chance of scalding, also to render the vessel more easily handled. The working of the stop bails can be seen from the illustrations, allowing the vessel to be tipped by the side lug for pouring, the handle being held in a rigid position. The inside enameling is of a blue gray tint, to the quality of which they direct special attention, while the outside of the vessel is varnished. We are advised these goods are giving excellent satisfaction.

*Fig. 1.—Triumph Hollow Ware.*

*Fig. 2.—Triumph Hollow Ware.*

## Sheet Metal Novelties.

The use of sheet metal in various branches of industry is rapidly growing in favor and its substitution for wood in many places is especially noticeable. One of the industries in which it is largely used is that of the manufacture of traveling trunks, particularly by concerns in England where sheet metal trunks are more common than those made of wood.



*Sheet Metal Novelties.—Fig. 1.—Patent Steel Traveling Trunk.*

In Fig. 1 of the illustrations we show a view of a steel trunk which has been brought out by Mr. J. Tonry, of Wolverhampton, England. It is placed upon the English market as possessing new and novel features, and is claimed to be very durable in its construction. It is provided with a lid and drawer made of tinned steel. The manner in which the drawer may be pulled out is clearly indicated in the accompanying engraving. It will be seen that it is arranged to slide in and out of the lid without the necessity of removing the top, the object being to utilize a portion of the trunk which heretofore, according to the manufacturers, has been left vacant, while at the same time space is provided for small articles. The drawer is fitted with a lock distinct from the trunk itself, the trunk lock being fitted in such a manner that one may open either the trunk or the drawer independent of the other. The trunk is angular in shape in order to provide greater strength and resistance where most needed. The top is protected by three patent molded wrought iron bands fitted over three strong wooden bands running the entire length of the trunk and securely riveted. The trunk is provided with a patent shackle lock and is japanned in a variety of colors. Several sizes are made ranging from 21 to 36 inches.

Another use to which sheet metal is put by some of the English manufacturers, is in the construction of useful articles of household furniture. Among these may be mentioned a folding washstand in imitation of a cabinet, with drawers, which has recently been brought out by R. & W. Wilson & Sons, limited, London, England. The interior of this device is provided with a towel holder, a water tank, an oval basin, a looking glass, soap dish, sponge holder, slop receiver, and spaces for the reception of other useful articles. This folding washstand, an open view of which is afforded by Fig. 2 of the illustrations, is made of metal and finished in Japan. The arrangement is very compact and is claimed by the manufacturer to be an excellent adjunct for the house and office, especially in the tropics, as it does not offer the same facilities for attack to white ants as wood. The latter, it is claimed, is attacked with avidity when in contact with moisture or dampness. Fig. 3 of the illustrations shows the appearance of washstand when closed.

*Fig. 2.—Open View of Folding Washstand.*

The Iowa coal palace, to be finished in season for the exposition to be held September 16, at Ottumwa, will be 260 feet in length, with an average width of 130 feet, the main tower lifting itself upward over 200 feet. It will be built with an architectural character of its own, and the whole structure will be veneered with coal, various unique designs being woven into the building of jet from the output of the various mines about Ottumwa. A miniature coal mine is to be one of the features, where the mules, the miners with their lamps and picks, and the coal in large veins can be seen. The palace will be two stories in hight.

## The Drummer's Stratagem.

"It is a hard life, that of the drummer," said one, yesterday, to whom thirty years of hard work has given the right to speak with authority. "It is a hard life, but it's an interesting one, and it gives a man a close hold on hard facts and realities. The drummer learns in a hard school, but he does learn, and the lessons pay. What is the first lesson he has to learn? How to manage men; how to approach a reluctant or indifferent, or a suspicious buyer, so as to win his confidence and overcome his disposition.

"Experience teaches this better than anything else, though some men learn it more easily than others. I remember

*Fig. 3.—View of the Washstand Closed.*

when I began to travel as salesman—on my very first trip, I think it was, when I was hardly more than a lad—I had an experience that proved very valuable to me. There was one old fellow on my route who had been known for years as the terror of all traveling men. He was declared to be abtolutely the worst natured, worst mannered fellow they had met anywhere, but I hadn't even heard of him then, and so I entered his store very confidently and handed him my card. He took it without even glancing at it, tore it into bits and threw the pieces on the floor. 'Now, sir,' he said, turning to me, 'get out of my store.' There were two pretty young girls in the store who did not understand the proceeding, and who looked at me as I walked out as if I were an escaped convict.

"Well, I smarted for several days over that affair, during which time I had made up my mind that I'd even matters with him if I could next time. So before I started out I had a card made expressly for my good friend. It looked exactly like the one I had used before, only that it was made of tin. When I reached his town I waited until I saw the store pretty well filled with people, and then I walked in, saluted the proprietor and gave him my card. He took it, just as before, glared at me and gave the card a twist. But it didn't fall in bits on the floor this time, and he only succeeded in giving his wrist a wrench and raising a titter among the customers.

"I was nearly out of the door this time, for I really didn't think my life was safe.

But he called after me and I went back. 'Come into my office,' he said. I went in, expecting never to come out.

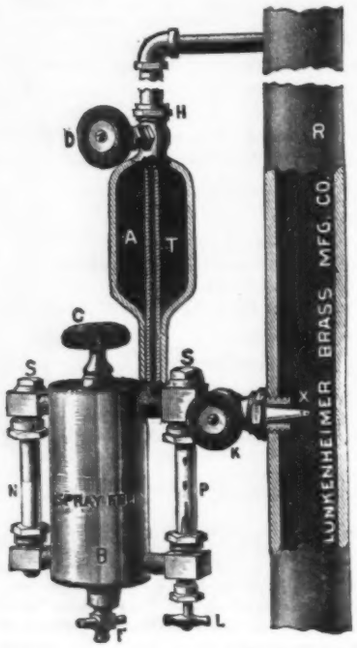
"'What did you want to sell me?' he asked.

"'Dress goods,' I said.

"'Well, go on.' And I actually sold the old curmudgeon over $1000 worth of cloths before I left. For years after—as long as he lived, in fact—he was one of my best customers, and one of the best friends I ever made in my business."

## Spray Feed Lubricator.

The Lunkenheimer Brass Mfg. Company, Cincinnati, Ohio, are getting up an improved sight feed lubricator, which will shortly be put on the market. It is illustrated in the cut here presented. The spray feed system of feeding oil, as used in this lubricator, is explained as consisting in forcing the oil (after it has passed in drops up through the glass tube) into the steam pipe in the form of spray, thus completely mixing it with the steam before it reaches the parts to be lubricated. We are advised that this is accomplished by an independent driving or forcing current of steam, which passes through the pipe T and out of the spraying nozzle X, on the same principle as used in injectors. This lubricator is provided with a needle to properly guide the oil drops as they leave the nozzle in the sight feed glass. The manufacturers make the point that but half the amount of oil used by the old style sight feed lubricators is required—that is, only half the number of oil drops need be fed through the glass tube. Attention is directed to the fact that it can be attached on either side of the throttle or on the steam chest; also that it will not syphon.




A—Condenser.
B—Oil Chamber.
C—Filling Plug.
D—Condenser Valve.
F—Drain Valve.
H—Union for Connecting Condenser Pipe.
K—Discharge Valve.
L—Oil Regulating Valve.
N—Gauge Glass, Showing the Quantity of Oil in B.
P—Sight Feed Glass, Showing Oil Drops.
X—Spraying Nozzle.
T—Steam Supply Pipe for Forcing Oil through Nozzle.

*Lunkenheimer's Spray Feed Sight Feed Lubricator.*

## Sims' Patent Eave Trough.

Sims & Mallard, of Newark, Ohio, are about to place on the market a patent eave trough, a view of a section of which appears in the accompanying illustration. The eave trough is made of galvanized iron, IXX tin and copper. Each section is made with flanged U or V-shaped guides, and has one end provided with a slip joint so constructed that the flanged guides of one section will fit into the flanged guides of the next while the plain end of the second section will fit into the slip joint of the first section. The cross brace, clearly indicated in the engraving, is made of a piece of sheet metal provided with a guide and shoulder, so placed as to hold the eave trough rigidly in position. To the center of the cross brace may be attached a suitable fastening device for the purpose of attachment to the roof of a building to support the trough. The length of a section of this trough is from 8 to 10 feet, being made longer or shorter as the necessities of the case may require. As many cross braces are employed as may be necessary to insure the stability of the eave trough. The manufacturers state that galvanized soft steel will be employed for the standard trough made by them, and that every foot will be guaranteed. The construction employed is covered by a patent granted to Lewis C. Sims in January of the present year. The down spout length of the eave trough is provided with an end wall, formed from the body of the trough in such a way as to constitute a solderless water tight joint.

*Sims' Patent Eave Trough.*

## Arnott's Patent Refrigerator.

A refrigerator of somewhat novel construction is that shown in the accompanying illustration, and which is being offered the English trade by T. P. Cook & Co., of London, England. It is made both round and square and finished in japan. The arrangement is such that the ice is placed in the upper part of the refrigerator, while in the lower portion are one or more wire shelves so placed as to insure the free circulation of air about the articles placed thereon. A number of air ducts are placed in such a way as to permit of a constant circulation of air through the refrigerator. The illustration which we present herewith has the cover of the refrigerator removed and one side broken away, thus permitting the reader to gather a very clear idea of the interior construction of the device.

*Arnott's Patent Refrigerator.*

## The Amalgamated Association.

The sessions of the Amalgamated Association of Iron and Steel Workers, at Pittsburgh, were brought to a close on Wednesday, the 25th ult. About the last business brought before the meeting was the election of officers, and no little surprise was shown when it was announced that William Martin, who has been secretary of the association for twelve years, had positively declined to allow his name to go before the convention for re-election. Mr. Martin was earnestly solicited to reconsider his determination, but without avail. The election was then proceeded with and resulted as follows: President, William Weihe; secretary, Stephen Madden; treasurer, James Penny, by acclamation. Trustees, James H. Nutt, Youngstown; Edward O'Donnell, Philadelphia; Edward A. Keil, Allegheny. Delegates to the Convention of the American Federation of Labor: Jeremiah Dougherty, W. A. Carney, and Reese W. Prosser. After the election of officers had been concluded the question of where to hold the next meeting of the association was brought up. The cities of Pittsburgh, Cleveland, Cincinnati and Allegheny were all mentioned, and on a vote the city of Allegheny was selected. The next meeting of the association will be held there, commencing on the first Tuesday of June, 1891.

## Washington News.

*(From Our Regular Correspondent.)*

WASHINGTON, D. C., July 1, 1890.

Senator Morrill, Chairman of the Committee on Finance, speaking of the consideration of the Tariff bill, said that it was the original purpose of his colleagues to enter upon the discussion to-day, but owing to the scattering of Senators over the Fourth of July, it was concluded that it would be useless to expect any interest in the subject until after this season of annual patriotic fervor had passed.

There is a plan to informally set aside the Tariff and give the Election bill, which is expected to pass the House to-morrow, the right of way. The Democratic Senators are not willing to accede to this if they can help it, as they wish to give the tariff emanations of this Congress a thorough ventilation. As the Election bill, if passed, will be operative at the November elections, the minority are determined to prevent it from becoming a law before that date. The results of that election upon the political complexion of the lower branch of the Fifty-second Congress will determine the fate of this class of legislation. If the Republicans should win there will be no further interest in national election laws, and if the Democrats turn out the successful contestants a desperate attempt will be made to force action for future application.

The Tariff bill, therefore, is subject to several contingencies. If the proposition to put it aside to make way for the Election bill should be the settled Republican programme the probability of tariff legislation is invested with some doubt. The Republican Senators have had such vigorous oral and epistolary reminders of the unsatisfactory character of their amendments to the House bill that it will not require a great deal of persuasion to induce them to alter and amend their propositions in the direction of the principles of that bill. The latter measure has been attended with as little unfavorable comment from the interests involved as any which has gone through the House stages of legislation for many years. The industrial interests and others who stand upon the platform of protection were very careful in their recommendations to the Committee on Ways and Means, and the measure which resulted was understood to be an exponent of their views and wishes. If the Senate does not vote down the committee amendments, important modifications will be made in conference. The wheels of legislation will be given a temporary halt on Thursday over the natal day of the Republic.

## PERSONAL.

James Morgan, who for 25 years has been mechanical engineer at the American Iron Works of Jones & Laughlin, Limited, at Pittsburgh, has resigned his position on account of ill health. Mr. Morgan will shortly sail for Europe and will remain abroad for six months.

P. H. Laufman, of the Apollo Iron Works, Pittsburgh, is spending a month in Central New York.

Frank L. Froment, treasurer of the Brandon Rolling Mill Company, Limited, at Brandon, Pa., has been elected president of the New York and Perry Coal and Iron Company, of Shawnee, Ohio.

Fred P. Dewey, until recently curator of metallurgy at the United States Natural Museum, has established a laboratory and metallurgical works at 621 F street, N. W., Washington.

Engineer A. H. Lightall has charge of the new Third avenue cable plant to be substituted for the horse-car system, and which will cost $200,000. Several thousand tons of steel will be required in the shape of "yokes" to support the rails and conduit for the steel cable.

David Williams, publisher of *The Iron Age*, has gone to Buchanan, Va.

## The Roach Sale.

A company of British capitalists have been formed to acquire from the representatives of the late John Roach the shipbuilding yards and engine works at Chester, on the Delaware River, and the Morgan Iron Works, at Ninth and Tenth streets and Avenue D, in this city. The new corporation is to be known as Roach's Shipbuilding and Engineering Company, Limited, and it has been incorporated in Great Britain, under the Companies act of 1862 to 1886. The preliminary prospectus, which has been received by Charles D. Freeman & Co., of No. 7 Wall street, sets forth that the share capital is to be £600,000, divided into 8 per cent. preference shares of £10 each, £300,000, and ordinary share of £10 each, £300,000, of which a portion will be issued to the vendors in part payment of purchase money. In addition to the share capital a debenture capital of £300,000 in 15,000 6 per cent. debentures of £20 each is provided for.

The prospectus announces that the Board of Management in the United States will consist of the following: John B. Roach, president of the Chester Works; George E. Weed, president of the Morgan Iron Works; Henry Steers, president of the Eleventh Ward Bank, and William Rowland, of New York City. The National Bank of Scotland is named as the bankers of the new corporation, and the solicitors are Paine, Son & Pollock, 14 St. Helen's place, London, and Cary & Whitridge, 59 Wall street, New York.

Complete descriptions of the shipyard at Chester and of the Morgan Iron Works are given in the prospectus, and also the history of the property from the time the late Mr. Roach acquired possession of it. For the three years from 1887 to 1890 the work executed is put down as $829,616, $1,203,367, and $2,701,384, respectively, and it is estimated that after paying 6 per cent. on the debentures, 8 per cent. on the preference shares, and 12 per cent. on the common shares, there would be a surplus of about $50,000 to meet expenses of administration and incidental disbursements. The valuation placed upon the property as it stands to-day is $2,357,261, not including goodwill. The amount to be paid to the representatives of the estate is fixed at £800,000, payable partly in cash and partly in ordinary shares at the option of the directors.

## BIRMINGHAM NOTES.

The unsettled condition of labor has brought the iron trade almost to a standstill this week. Several furnaces have shut down for repairs and others will probably go out of blast next week. While mine owners and furnacemen are hopeful of a satisfactory settlement of the labor problem, they are getting ready for a strike. All the furnaces in the district will be ready to bank their fires next week if the miners go out on a strike. No orders for iron are accepted now unless the stock is on hand to fill them. No iron is being sold for July or August delivery.

This is the labor situation in a nut shell. For two years the coal miners in this district have been paid a sliding scale based on the price of iron. When No. 1 iron is worth $13 at the furnace the miners are paid 45 cents per ton for mining coal, with an advance or reduction of five cents per ton as the price of iron advances or declines $1 per ton. The contracts with the men expire July 1, and they have decided not to sign a new contract at this rate. Meetings were held by the miners last week, and it was decided at nearly all the mines in the district to demand an advance of five cents per ton and one price, no more sliding scale. The advance, it is understood, will not be granted. If the men do not hold out for the advance they will against the sliding scale, so a strike is certain unless the conference committees can agree upon some compromise arrangement. The Tennessee Coal, Iron and Railroad Company and the Sloss Iron and Steel Company can keep their furnaces running, as they work convicts in their coal mines, but in the event of a strike all the other furnaces in the district would have to shut down.

There has been no change in the price of iron since last week, and everything will remain practically at a standstill until the labor question is settled.

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# CURRENT HARDWARE PRICES.

## JULY 2, 1890.

*Note.*—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

**Adjusters, Blind.**
Domestic.....₱ doz $3.00, 33⅓%
Excelsior.....₱ doz $10.00....50&10&2%
Washburn's Self-Locking.....20@20&10%

**Ammunition.—**
*Caps, Percussion,* ₱ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....34@35¢
E. B. Trimmed Edge, 1-10's.....46@48¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....46@47¢
Musket Waterproof, 1-10's.....50¢
G. D.....28¢
S. B. Genuine Imported.....45¢
Eley's E. B.....54¢ @ 55¢
Eley's D Waterproof, Central Fire...$1.60
*Cartridges—*
Rim Fire Cartridges.....50&5&2 %
Rim Fire Military.....15&2 %
Cent. Fire, Pistol and Rifle.....25&5&2 %
Cent. Fire, Military and Sporting 15&5&2 %
Blank Cartridges, except 22 and 32 cal., additional 10 % on above discounts.
Blank Cartridges, 22 cal., $1.75.....2 %
Blank Cartridges, 32 cal., $3.50.....2 %
Primed Shells and Bullets.....15&5&2 %
B. B. Caps, Round Ball, $1.75.....2 %
B. B. Caps, Con. Ball, Swgd., $2.00.....2%
*Primers—*
Berdan Primers, $1.00.....2%
B. L. Caps (for Sturtevant Shells) $1.00.....2%
All other Primers, $1.20.....2%
*Shells—*
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Prize.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
I X L, 10 and 12 guage.....40&5&2%
"Special," 16 gauge.....30&10&5&2%
"Special," 10 and 12 gauge.....40&10&2%
Fowler's Pat.....$1.25
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%
*Shells Loaded—*
Standard List.....40&10&10&5%
*Wads*—Price per M.

| | | Dis. 50&2 |
|---|---|---|
| U.M.C.&W. R. A.—B. E., 11 up... | 68¢ | |
| U.M.C.&W. R. A.—B. E., 9&10... | 82¢ | |
| U.M.C.&W. R. A.—B. E., 8..... | 96¢ | |
| U.M.C.& W.R. A.—B. E., 7..... | $1.10 | |
| U.M.C.&W. R. A.—P. E., 11 up.. | 1.15 | |
| U.M.C.&W. R. A.—P. E., 9&10.. | 1.50 | |
| U.M.C.&W. R. A.—P. E., 8..... | 1.70 | |
| U.M.C.&W.R. A.—P. E., 7..... | 1.80 | |
| Eley's B. E., 11 up.....$1.75 | | |
| Eley's P. E., 11@20.....2.80 | | |

**Anvils.—**
Eagle Anvils, ₱ ℔ 10¢.....15@15&5%
Peter Wright's.....10½¢
Armitage's Mouse Hole.....9½¢
Armitage's Mouse Hole, Extra.11½@11¾¢
Trenton.....9½@10¢
Wilkinson's.....9¾@10¢
J. & Riley Carr, Pat. Solid.....11@11½¢
Moore & Barnes Mfg. Co.....33⅓%
*Anvil Vise and Drill—*
Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $5.00.....40&10%
Star.....45&5 %

**Apple Parers**—See Parers, Apple, &c.

**Augers and Bits—**
Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.
Rockford Bit Company.
70@70&10%
Cook's, Douglass Mfg. Co.....55 %
Cook's, N. H. Copper Co.50&10@50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₱ set, 22½ quarters, No. 5, $5; No. 30, $3.50.20%
Lewis' Patent Single Twist.....45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60@60&5%
Snell's Jennings Pattern.....60%
Pugh's Black.....20%
Rockford, Jenning's Pattern.....60%
Car Bits.....60@60&10%
Car Bits, P. S. & W. Co.....60&10%
Snell's Car Bits.....60%
L. Hommodieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....10%
Cincinnati Bell-Hangers' Bits ...30&10%
*Bit Stock Drills—*
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood...40&10%
Cincinnati, for wood.....50&10%
Cincinnati, for metal.....45&10%
*Expansive Bits—*
Clarke's small, $18; large, $26...35@35&5%
Ives' No. 4, ₱ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%
*Gimlet Bits—*
Common.....₱ gross $2.75@$3.25
Diamond.....₱ doz $1.10.....25&10%
Bee.....25@25&5%
Double Cut Shepardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co ...30&10%
Double Cut, Hartwell's, ₱ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%
*Hollow Augers—*
Ives
French, Swift & Co.
Douglass'
33⅓@ 33⅓&10%
Bonney's Adjustable, ₱ doz $48....40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%
*Ship Augers and Bits—*
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

**Awl Hafts**—See Hafts, Awl.

**Awls, Brad Sets, &c—**
Awls, Sewing, Common ₱ gr $1.70, 35%
Awls, Should. Peg, ₱ gr $2.45, 40@40&10%
Awls, Pat. Peg...₱ gr 63¢....40@40&10%
Awls, Shouldered Brad...2.70 ₱ gr.....35%
Awls, Handled Brad...$7.50 ₱ gr.....45%
Awls, Handled Scratch ₱ gr, $7.50.35&10%
Awls, Socket Scratch, ₱ doz, $1.50.25@30%

**Awl and Tool Sets**—See Sets, Awl and Tool.

**Axes—**

| | Plain. | Beveled. |
|---|---|---|
| First quality | $8.00 | $8.50 |
| Others | 7.50 | 8.00 |

*Note.*—Jobbers often sell at lower prices than the above.

**Axle Grease**—See Grease, Axle.

**Axles—**
No. 1, 4¼@5¢, No. 2 5¼@6¼¢ } 3 % cash
Nos. 7 to 14.....55&5%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
Concord Axles, loose collar.....5¢@6¢
Concord Axles, solid collar.....6¢@ 7¢
National Tubular Self-Oiling..... 33⅓%@33⅓&5%

**Bag Holders.**—See Holders, Bag.

**Balances—**
Spring Balances.....40%

| | No. 2000 | 20 | 30 |
|---|---|---|---|
| Chatillon, ₱ doz. | $0.80 | 0.95 | 1.75 net |

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

**Bars.**
*Cross—*
Cast Steel.....₱ ℔ 4¼¢
Iron, Steel Points.....₱ ℔ 3¾¢

**Basins, Wash—**
Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

**Beams, Scale—**
Scale Beams, List Jan. 12, '82...50&10@ 50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

**Beaters, Egg, &c—**
Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....20 %
Dover.....₱ doz $1.50
Duplex (Standard Co.).....₱ doz $1.25
Rival (Standard Co.).....₱ doz $1.00
Duplex Extra Heavy (Standard Co.)... ₱ doz $3.50
Bryant's.....₱ gro $14.00
Double (H. & R. Mfg. Co).....₱ gro $16.20
Easy (H. & R. Mfg. Co.).....₱ gro $14.00
Triple (H. & R. Mfg. Co.).....₱ gro $16.20
Spiral (H. & R. Mfg. Co.).....₱ gro $4.50
Paine, Diehl & Co.'s.....₱ gro $24.00

**Bells—**
*Cow—*
Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Dodge, Genuine Kentucky.....70&70&10%
Texas Star.....50&10@50&10&5%
Call.....40@40&5%
Farm Bells.....₱ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%
*Door—*
Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Pull, Western.....25&10%
*Electric,*
Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%
*Hand—*
Light Brass.....75 @ 75&10%
Extra Heavy.....65 @ 65&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe (Cone's Patent).....25&10@35%

**Bellows—**
Blacksmiths'.....60&5@65%
Molders'.....40@40&10%
Hand Bellows.....40&10@50%

**Belting, Rubber—**
Common Standard.....70%
Standard.....60&10&10@70%
Extra.....50&10@60%
N.Y.B.&P.Co., Carbon...50&5@50&10&5%
N.Y.B.&P.Co., Diamond....40&5@40&10%

**Bench Stops**—See Stops, Bench.

**Benders, Upsetters, Tire.**
Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

**Bits—**
Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

**Bit Holders**—See Holders.

**Blind Adjusters**—See Adjusters, Blind.

**Blind Fasteners** See Fasteners, Blind.

**Blind Staples**—See Staples, Blind.

**Blocks—**
Ordinary Tackle, list May 20, 1889... 50&10@60%
Cleveland Block Co., Mal. Iron.....50%
Moore's Novelty, Mal. Iron.....50%

**Bolts—**
*Carriage, Machine, &c.—*
Com. list June 10, '84.....70&10&7½&2%
Genuine Eagle, list Oct., '84...75&10@80%
Phila. pattern, list Oct. 7, '84..80@80&10%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890..... 75&10@75&10&5%
Bolt Ends, list Jan. 1, 1890..... 75&10@75&10&5%
*Door and Shutter—*
Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..60&10%
Wr't Shutter, Brass Knob, " ...40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list...55&10%
Wr't Sunk Flush, Stanley's list....50&10%
Wr't B.K.Flush. Com'n " ...55&10%
*Stove and Plow—*
Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%
*Tire—*
Common, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83.....65%
Keystone, Philadel., list Oct. '84....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R.B.&W., Philadel., list Oct. 16, '84....80%

**Borers, Tap.**
Common and Rind.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10@30%
Clark's.....33⅓@35%

**Borax**.....₱ ℔ 9½@10½¢

**Boring Machines**—See Machines, Boring.

**Bow Pins**—See Pins, Bow.

**Boxes, Wagon.**
Per ℔.....2¾¢

**Braces.—**
American Bit Brace Co.:
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5%
Ball Braces, net.....$1.12 to $1.25¢
Amidon's
Barker's Imp'd Plain.....75&10 @80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber's,
Nos. 10 to 16.....80%
Nos. 30 to 33.....50%
Nos. 40 to 63.....50&10%
Barker's,
Nos. 8, 10 and 12.....75&10@80%
Plated, Nos. 8, 10 and 12....65&10@70%
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's..50&5@50&10%
Fray's No. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%
P. S. & W. Co., Peck's Patent.....60%

**Brackets—**
Shelf plain, Sargent's list, 55&10@55& 10&10%
Shelf, fancy, Sargent's list, 60&10@60 &10&10%
Reading, plain.....50&10@60&10&5%
Reading, Rosette.....60&10@60&10&10%

**Bright Wire Goods**—See Wire.

**Broilers—**

| | 9 | 10 | 9x11 |
|---|---|---|---|
| Henis' Self-) Inch..... | | | |
| Basting. ) Per doz... | $4.50 | 5.50 | 6.50 |

New Haven.....50%

**Buckets, Well.**
*Galvanized—*
Hill's.....₱ doz, 12 qt, $4.25; 14 qt, $5.25
Iron Clad.....₱ doz, 14 qt, $4.25@$4.50
Whiting's Flat Iron Band.....$4.25@4.50
Whiting's Wired Top..₱ doz $4.00@ 4.25

**Bull Rings**—See Rings, Bull.

**Butcher's Cleavers**—See Cleavers Butchers'.

**Butts—**
*Brass—*
Wrought Brass.....75&10@80%
Cast Brass, Tiebout's'.....50%
Cast Brass, Corbin's, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%
*Cast Iron—*
Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.
Loose Joint, Japanned.
Loose Joint, Jap. with Acorns.
Parliament Butts.
Mayer's Hinges.
Loose Pin, Acorns.
Loose Pin, Acorns, Japanned.
Loose Pin, Acorns, Japanned, Plated Tips.
.70&5@ 70&10%
*Wrought Steel—*
Fast Joint, Narrow.
Fast Joint, Lt. Narrow.
Fast Joint, Broad.
Loose Joint, Broad.
Table Butts, Back Flaps, &c.
Inside Blind, Regular.
Inside Blind, Light.
Loose Pin.
.70&5@ 70&10%
Bronzed Wrought Butts.....50

**Calipers**—See Compasses.

**Calks, Toe—**
Gautier.....₱ ℔ 5½¢@6¢
Dewicks (Burke).....₱ ℔ 5½¢@6¢

**Can Openers**—See Openers, Can.

**Cards—**
Horse & Curry.....10&10&10&10%
Cotton.....10&10&10%
Wool.....10&10&10%

**Carpet Stretchers**—See Stretchers Carpet.

**Carpet Sweepers**—See Sweepers Carpet.

**Cartridges**—See Ammunition.

**Casters—**
Bed..... } Brass....55@55&10%
Plate..... } Others...60@60&10%
Shallow Socket....
Deep Socket.....40&10%
Yale Casters, list May, 1884...50&10@40%
Yale, Gem.....60@60&5%
Martin's Patent (Phenix).....45&10@50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

**Cattle Leaders**—See Leaders, Cattle.

**Chain—**
Trace, Wagon and Fancy Chains, List revised April 21, 1890.....50& 10@60%

| American Coil, in cask lots, | 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | ⅝ | ¾ |
|---|---|---|---|---|---|---|---|---|
| | $8.00 | 5.70 | 4.80 | 4.20 | 3.90 | 3.75 | 3.65 | 3.55 |

Less than cask lots, add 1¢@1½¢ ₱ ℔.
German Coil, list of June 20, 1887 50&10&5@60%
German Halter Chain, list of June 20, 1887.....50&10&5@60%
Covert Halter.....60&2%
Covert Traces.....35@2%
Covert Heel Chain.....50&2%
Onelda Halter Chain.....60@60&2%
Galvanized Pump Chain.....₱ ℔ 5½@6¢
Jack Chain, Iron.....75&10@80%
Jack Chain, Brass.....75@75&10%

**Chalk—**

| | |
|---|---|
| White | ₱ gr 50¢ |
| Red | ₱ gr 70¢ |
| Blue | ₱ gr 85¢ |

See also Crayons.

**Chalk Lines**—See Lines.

**Chisels—**
*Socket Framing and Firmer.*
P. S. & W.
New Haven.
Witherby.
Mix.
Ohio Tool Co.
.75 @ 75&10
Douglass.....75@75&5%
Buck Bros.....30%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%
*Tanged and Miscellaneous.*
Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to $
Buck Bros.....30%
Cold Chisels, ₱ .....15@1 %

**Chucks—**

Beach Pat.....each, $8.00.....20%
Morse's Adjustable,each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Bals Pat.....25%
Skinner's Patent Chucks.
Combination Lathe Chucks.....33⅓%
Universal Lathe Chucks.....40%
Independent Lathe Chucks.....40%
Drill Chucks.....15%
Union Mfg. Co.,
Victor.....$8.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

**Churns.**

Tiffin Union No. 1, 5 gallon...$3.25 each
Tiffin Union No. 2, 7 gallon...$3.75 each
Tiffin Union No. 3, 10 gallon...$4.25 each

**Clamps—**

R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30&30&10%
Stearn's Adjustable Cabinet and Corner.....30&30&10%
Cabinet, Sargent's.....60&5&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co. 40&10%
Eberhard Mfg. Co.....40&5&40&10%
Warner's.....40&10&40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....25&:0f

**Cleavers.**

*Butchers'.*
Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5&33⅓&10%
Foster Bros.....30%
Schulte, Loboff & Co.....40@40&5%

**Clips—**

Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips.....66⅔&5&70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₱ lb, 5½¢
Steel Felloe Clips.....₱ lb, 5¢
Baker Axle Clips.....12½

**Cloth and Netting, Wire—See** Wire, &c.

**Cockeyes.....50%**

**Cocks, Brass.**

Hardware list.....50&2%

**Coffee Mills—See** Mills, Coffee.

**Collars, Dog, &c.**

Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list. 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company....50&10&60%

**Combs, Curry.**

Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....30%
Perfect.....50%

**Compasses, Dividers, &c.—**

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

**Coopers' Tools—See** Tools, Coopers'.

**Cord, Sash—**

Common.....₱ lb 10@11¢
Patent, good quality.....₱ lb 13@13½¢
White Cotton Braided, fair...₱ lb 28@29¢
Common Russia Sash.....₱ lb 13½¢
Patent " " .....₱ lb 16¢
Cable Laid Italian Sash.....₱ lb 22@23¢
Indian Cable Laid " ... .....₱ lb 13¢
Silver Lake—
A Quality, White, 50¢.....10&10&5%
A Quality, Drab, 55¢.....10&10&5%
B Quality, White, 50¢.....28@30%
B Quality, Drab, 55¢.....31@33%
C Quality, White (only).....26½@28¢
Sylvan Spring, Extra Braided, White, 34¢
Sylvan Spring, Extra Braided, Drab..30¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Samson—
Braided, White Cotton, 50¢...30@30&5%
Braided, Drab Cotton, 55¢....30@30&5%
Braided, Italian Hemp, 55¢...30@30&5%
Braided, Linen, 80¢.....30@30&5%

**Corkscrews—See** Screws, Cork.

**Corn Knives and Cutters—See** Knives, Corn.

**Crackers, Nut—**

Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₱ doz $2.00, 10%
Turner & Seymour Mfg. Co... .....50%

**Cradles—**

Grain.....50&5&2@50&10&2%

**Crayons.**

White Crayons, ₱ gr, 12½@12½¢.....10%
D. M. Stewart Mfg. Co., Metal Workers, ₱ gr, $2.50.....25%
M. Stewart Mfg. Co., Rolling Mill, ₱ gr, $2.50.....25%
See also Chalk.

**Crow Bars—See** Bars, Crow.

**Curry Combs—See** Combs, Curry.

**Curtain Pins—See** Pins Curtain.

**Cutters—**

*Meat.*
Dixon's ₱ doz.....40&5%
Nos.... 1 2 3 4
$14.00 $17.00 $19.00 $30.00
Woodruff's ₱ doz.....40&5%
Nos..... 100 150
$15.00 $18.00
Hales Pattern ₱ doz.....70@70&5%
Nos..... 11 12 13
$27.00 $33.00 $45.00
American.....30%
Nos..... 1 2 3 4 5 6
Each.....$5 $7 $10 $25 $50 $60
Enterprise.....30%
Nos.....10 12 22 32 42
Each.....$3 $2.50 $4 $6 $15
Pennsylvania.....40&10%
Nos..... 1 2 3 00
₱ doz...$24.00 $28.00 $36.00 $28.00
Miles' Challenge ₱ doz.....45@45&10%
Nos..... 1 2 3
$32.00 $30.00 $40.00
Home No. 1.....₱ doz, $26.00, 55&10%
Draw Cut, each:
Nos..5 2 6 8
$50 $75 $90 $225 .....30@25%
Great American.....50%
Beef Shavers (Enterprise).....20&10@30%
Little Giant.....50%
Chadborn's Smoked Beef Cutter, ₱ doz $66.00

*Tobacco.*
Champion.....20&10@30%
Wood Bottom.....₱ doz $5.00@$5.25
All Iron.....₱ doz $4.25
Nashua Lock Co.'s..₱ doz, $18.00 50@55%
Wilson's.....55%
Sargents's .....₱ doz, $24, 55&10%
Acme .....₱ doz $20.00, 40%

*Washer.*
Smith's Pat.....₱ doz $12.00, 20&10&10%
Johnson's.....₱ doz $11.00, 33⅓%
Penny's. ₱ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₱ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

**Cutlery—**

Beaver Falls & Booth's.....33⅓
Wostenholme.....$7.75 to $

# Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

**Diggers, Post Hole, &c.—**

Samson Post Hole Digger, ₱ doz $36.00, 25&10%
Fletcher Post Hole Augers, ₱ doz $36, 20%
Eureka Diggers.....₱ doz $16.00@17.00
Leed's .....₱ doz $8.00@9.00
Vaughan's Post Hole Auger, ₱ doz $15.00@14.00
Kohler's Little Giant.....₱ doz. $18.00
Kohler's Hercules.....₱ doz. 15.00
Kohler' New Champion.....₱ doz. $9.00
Schniedler.....₱ doz. $18.00
Ryan's Post Hole Diggers..₱ doz $21.00
Crook's Post Bars, ₱ doz $60.00, 50&5&50&10%
Gibbs Post Hole Digger, ₱ doz $30.00, 50¢
Imperial, ₱ doz $15.....45%

**Dividers—**

See Compasses.

**Dog Collars—See** Collars, Dog, &c.

**Door Springs—See** Springs, Door.

**Drawers.**

Money, ₱ doz.....$1&2&20

**Drawing Knives—See** Knives, Drawing.

**Drills and Drill Stocks—**

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action..25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85

*Twist Drills—*
Morse.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%

**Drill Bits.—See** Augers and Bits.

**Drill Chucks.—See** Chucks.

**Dripping Pans See** Pans, Dripping.

**Drivers, Screw.**

Douglas Mfg. Co... .....20@20&10%
Disston's.....45&10%
Disston's Pat. Excelsior.....45&10%
Buck Bros.....30%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60. .....65⅔&10&10%
P. S. & W. .....70 %
Knapp & Cowles No.1.....60&10&70%
No. 1 Extra.....60@60&10
Nos. 00 & 4.....50&5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₱ doz $6.00, 25&10%
Syracuse Screw-Driver Bits....30&30&5%
Screw-Driver Bits,.....₱ doz. 50@75¢
Screw-Driver Bits, Parr's.....₱ gro $6.25
Fray's Hol. Hdle. Sets. No. 3, $12.00, 75@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati .....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits .... %

# Egg Beaters.—See Beaters, Egg.

**Egg Poachers.—See** Poachers, Egg.

**Electric Bell Sets.—See** Bells, Electric.

**Emery.**—No. 4 to No. 54 to Flour, CF

| | 46 gr. | 150 gr. | F. FF. |
|---|---|---|---|
| Kegs, ₱ lb..... | 4½¢ | 5 ¢ | 2½¢ |
| ½ kegs, ₱ lb...4½¢ | | 5½¢ | 2¾¢ |
| ¼ kegs, ₱ lb...5 ¢ | | 5½¢ | 3 ¢ |
| 10-lb cans, 10 in case.....6 ¢ | | 6½¢ | 5 ¢ |
| 10-lb cans, less than 10.....10 ¢ | | 10 ¢ | 7½¢ |

**Enameled and Tinned Ware—See** Ware, Hollow.

**Escutcheon Pins—See** Pins, Escutcheon.

**Escutcheons.**

Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood..... 25%

**Expanded Metal.**

List No. 5.

Lathing..... ....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

# Fasteners, Blind—

Mackrell's, ₱ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₱ gr..60&10%
Van Sand's Old Pat., $15.00 ₱ gr..55&10%
Washburn's Old Pattern, ₱ gr.....$9.00
Merriman's.....new list
Austin & Eddy No. 2008 ₱ gr.....$9.00
Security Gravity, ₱ gr.....$9.00

**Faucets.—**

Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10%
60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots.....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₱ doz $50.00.....20&10%
Lane's, ₱ doz $36.00.....25&10%
Victor, ₱ doz $36.00.....25 &10%

**Felloe Plates—See** Plates, Felloe.

**Fifth Wheels.—**

Derby and Cincinnati..... .....45&5%
Brewster. .....50&5%

**Files—**

*Domestic—*
Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
Other makers, best brands.....60&20%
Fair brands .....60&10&10@70&5%
Second quality .....70&10@75&10%
Nicholson's Horse Rasps....60&10@60& 10&5%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps. .....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%

*Imported—*
Moss & Gamble....List, April 1, 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

**Fixtures.**

*Grindstone—*
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

**Fluting Machines—See** Machines, Fluting.

**Fluting Scissors—See** Scissors, Fluting.

**Fodder Squeezers—See** Squeezers, Fodder.

**Forks—**

Hay, Manure, &c., Asso Liss.....70%
Hay, Manure, &c., Phila. List. 60@60&5%
Plated, see Spoons.

**Frames—**

*Saw—*
White Vermont.....₱ gro $9.00@10.00
Red, Polished and Varnished.....₱ doz $1.50, 25%

*Screen, Window and Door—*
Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons..33⅓@ 33⅓&10%
Stearns' Frames and Corners..25@25&10%

**Freezers, Ice Cream—**

White Mountain..... .. 60@60&5%
Granite State.....65@65&5%
Arctic .....70@70&5%
American.. .. .. 60%
Buffalo Champion..... ..65@65&5%
Shepard's Lightning..... 65@65&5%
Gem.... .....65%
Blizzard..... .....70%
Double Action Crown..... .....60%
Crown..... .....60%
Star .....60
Peerless and Giant.....60&10
Zero and Pet.....65&10
Boss.....65&10&10
Keystone, P. D. & Co., each, $1.50.....20%

**Fruit and Jelly Presses—See** Presses, Fruit and Jelly.

**Fry Pans—See** Pans, Fry.

**Funnels.**

Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10 %; 2 to 5 gro., 20 % ; 5 to 10 gro..... .....30 %
*Copper*, 1 to 6 doz., 15 % ; 6 to 12 doz., 20 % ; over 12 doz.....30 %

**Fuse—** ₱ 1000 ft
Common Hemp Fuse, for dry ground..$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.35
Double Taped Fuse, for very wet gr. 4.35
Triple Taped Fuse, for very wet gr.. 5.00
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

# Gates, Molasses—

Stebbin's Pattern.....75&10@80%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....20%
Lincoln's Pattern.....70@70&10%
Weed's.....20&10%
Boss, ₱ doz:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

**Gauges.**

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co .....10%
Wire, Morse's.....50@50&5%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....

**Gimlets—**

Nail and Spike.....50&10&5%
" Eureka " Gimlets.....40&10%
" Diamond " Gimlets.....₱ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
" Bee," ₱ gr $12.....25@25&5%

**Glue—**

Le Page's Liquid..... .....25@25&5%
Upton's Liquid .....35%
Le Page & Co.'s Improved Process 25@25&5%

**Glue Pots—See** Pots, Glue.

**Grease, Axle.**

Fraser's .....Keg ₱ lb 4¢, Pail ₱ lb 5¢
Fraser's, in boxes.....₱ gr $9.50
Dixon's Everlasting, in bxs...₱ doz 1 lb $1.20; 2 lb $2.00
Dixon's Everlasting....10-lb palls, ea. 35¢
Lower grades, special brands, ₱ gr $5.50@$7.00

**Grindstones—**

Small, at factory.... ..₱ ton $7.50@9.00

**Grindstone Fixtures—See** Fixtures, Grindstone.

# Hack Saws—See Saws.

**Hafts, Awl.**

Sewing, Brass Fer.₱ gr, $3.50.....45&10%
Pat. Sewing, Short.$1.00 ₱ doz.....40&10%
Pat. Sewing, Long.....₱ doz $1.20
Pat. Peg, Plain Top.₱ gr $10.00....45&10%
Pat. Peg, Leather Top.₱ gr $12.00.45&10%

**Halters.**

Covert's, Rope, ½-in. Jute..... 50&2%
Covert's, Rope, ½-in. Hemp .....50&2%
Covert's Adj. Rope Halters .....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse and Cattle Ties, 60&10&2%
Covert's Adj. Web Halters.....35&2 %

**Hammers—**

*Handled Hammers—*
Maydole's, list Dec. 1, '85.. ....25&10@35%
Buffalo Hammer Co.
Humason & Beckley .....
Atha Tool Co.....
Fayette R. Plumb.....
C. Hammond & Son.....
Hartford Hammer Co.....
Verree.....
50@50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.35, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%

*Heavy Hammers and Sledges—*
3 ℔ and under.. ....₱ ℔ 40¢
3 to 5 ℔.....₱ ℔ 36¢ } 70@70&10%
Over 5 ℔.....₱ ℔ 30¢ }
Wilkinson's Smiths.....10½¢@11¢₱ ℔

**Handcuffs and Leg Irons—See** Police Goods,

**Handles—**

*Cross-Cut Saw Handles—*
Atkins' No. 1 Loop, ₱ pair, 28¢ ; No. 3 18¢; No. 6, 16¢; No. 2 and No. 4 Reversible, 18¢.
Boynton's Loop Saw Handles, 50¢....60%
Champion.....15

*Iron, Wrought or Cast—*
Door or Thumb.

| Nos..... | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| Per doz.... | $0.90 | 1.00 | 1.13 | 1.35 1.50 |

60&10&10%

Roggin's Latches.....₱ doz 30¢@35¢
Bronze Iron Drop Latches..₱ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88 ..... net
Barn Door, ₱ doz $1.40..... 10&10%
Chest and Lifting.....70%

*Wood—*

Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₱ gr $2.00
Hickory Firmer Chisel, ass'd..₱ gr 4.50
Hickory Firmer Chisel, large..₱ gr 5.00
Apple Firmer Chisel, ass'd...₱ gr 5.00
Apple Firmer Chisel, large...₱ gr 6.00
Socket Firmer Chisel, ass'd...₱ gr 3.00
Socket Framing Chisel, ass'd..₱ gr 5.00
J. S. Smith & Co.'s Pat File.....50%
File, assorted.....₱ gr ? 75 } 40@
Auger, assorted.....₱ gr 5.00 } 40&10%
Auger, large.....₱ gr 7.00 }
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....₱ set $1.25
Pat. Auger, Swan's .....₱ set $1.00
Hoe. Rake, Shovel, &c. .....5%&10%

**Hangers—**

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track .....55%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....60%
Climax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling's Imp'ved (Anti-Friction).65&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree .....50&10%
Kidder's .....50&10@60%
The Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₱ doz pr. 4 in, $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₱ ft. 10¢.....50 &15@60%
Carrier Steel Anti-Friction.....50@50&5%
Architect, ₱ set $6.00.....20%
Eclipse.....20&10%
Felix, ₱ set $4.50.....20%
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Ball Bearing Door Hanger..30&10@25&10%
Warner's Pat.....20&10@20@10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₱ set $6.00.....30&10%
Rider & Wooster, No. 1, 63¼; No. 2, 75¢..... 40%
Paragon, Nos. 1, 2 and 3 .....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel .....40%
Scranton Anti-Friction Single Strap33⅓&%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star .....40&10@40&10&5%
May .....50&5@50&10%
Barry, $6.00.....40&10%

**Harness Snaps**—See Snaps.

**Hatchets—**

American Axe and Tool Co. Blood's, Hunt's, Hurd's, Mann's, Peck's, Underhill's..... } 40 & 10 @ 50&5 %
Buffalo Hammer Co. .....
Fayette R. Plumb.....
C. Hammond & Son... ...
Kelly's.....
Sargent & Co.....
P., S. & W. Co.....
Ten Eyck Edge Tool Co.....
Collins.....10%
Schulte, Lohoff & Co. .....50@50&5%

**Hay and Straw Knives**—See Knives.

**Hinges—**

*Blind Hinges—*

Parker.....75&2%
Palmer.....60&5&10%
Seymour .....70&2%
Nicholson.....45&10%
Huffer .....50%
Clark's, Nos. 1, 2, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity..... ...50%
Sargent's, Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's Noiseless.....75&10% Niagara.....80% Buffalo.....80% Clark's Genuine Pattern.....80% O. S., Lull & Porter.....75&10% Acme, Lull & Porter.....75% Queen City Reversible....70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1¼, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50. .....10%

*Gate Hinges—*

Western.....₱ doz $4.40, 60%
N. E. .....₱ doz $7.00, 55%
N. E. Reversible.....₱ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₱ doz $5.00, 55&10%
Automatic.....₱ doz $12.50, 50%
Common Sense.....₱ doz pair $4.50, 50%
Seymour's.....45&10%
Shepard's .....60&10&5%
Reed's Latch and Hinges. ₱ doz $12.00, 50%

*Spring Hinges—*

Geer's Spring and Blank Butts.....40%
Union Spring Hinge Co.'s list, March. 886 ... ..... ..... .....20%

Acme..... . . .....30%
J. S. .....25&10%
Empire and Crown.....20%
Hero and Monarch .....55%
American, Gem, and Star.....20%
Oxford.....20%
Barker's Double Acting.....20&10%
Union Mfg. Co.....25%
Sommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Wiles'.....10%
Devore's.....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Bardsley's Patent.....40%
Stearn's.....50&10%

*Wrought Iron Hinges*

Strap and T.....75&10%
Screw Hook and Strap..... { 6 to 12 in., ₱ lb. .8 9-10¢ / 14 to 20 in., ₱ lb. .8 4-10¢ / 22 to 36 in., ₱ lb. .2 9-10¢
Heavy Welded Hook..... { 6 to 12 in., ₱ lb .8 9-10¢ / 14 to 20 in., ₱ lb .8 4-10¢ / 22 to 36 in., ₱ lb .2 9-10¢
Screw Hook and Eye { ⅛ in., ₱ doz $1.50 / ¾ in., ₱ doz $2.45 / ¾ in., ₱ doz $3.80 } 10%
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges { 8, 10 & 12 in., ₱ lb .....5¢ / "Providence," over 12 in., ₱ lb. ....4¢

**Hoes—**

*Eye—*

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. 60&5@ 60&10%
Hubbard & Co.,S. & O. Pat.60&5@60&10%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub ..... .....60&10%

*Handled—*

Garden, Mortar, &c.....70%
Planter's, Cotton, &c..... .....70%
Warren Hoe.....60%
Magic.... . .....₱ doz $4.00

**Hog Rings and Ringers**—See Rings and Ringers.

**Hoisting Apparatus**—See Machines, Hoisting.

**Hollow-Ware**—See Ware, Hollow.

**Holders.**

*Bag.*

Sprengle's Pat.....₱ doz $18.....60%

*Bit.*

Extension, Barber's, ₱ doz $15.00.....40@40&10%
Ives, ₱ doz $20.00.....60&5@60&10%
Diagonal.. .....₱ doz $24.00, 40%
Angular..... ₱ doz $24.00, 40&5%

*File and Tool—*

Bals Pat.....₱ doz $4.00; 25%
Nicholson File Holders.....20%
Dick's Tool Holder.....20%

**Hooks—**

*Cast Iron—*

Bird Cage, Sargent's list..... } 60&10&10%
Bird Cage, Reading..... }
Clothes Line, Sargent's list.. }
Clothes Line, Reading list. 60&10@60&10&10%
Ceiling, Sargent's list..... .....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading .50&10@50&10&10%

*Wrought Iron—*

Cotton.....₱ doz $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)..50%
Wrought Staples, Hooks, &c. See Wrought Goods.

*Wire—*

Wire Coat and Hat, Gem, list April, 1886.....50%
Wire Coat and Hat, Miles', list April, 1886.....50%
Indestructible Coat and Hat.....45%
Wire Coat and Hat, Standard.....45%
Handy Hat and Coat.....50&10%
Steady Ceiling Hooks.....50&10%
Belt. .....80@80&10%
Atlas, Coat and Hat.....60%

*Miscellaneous.*

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₱ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks .....See Bench Stops.

**Horse Nails**—See Nails, Horse.

**Horse Shoes**—See Shoes, Horse.

**Hose, Rubber—**

Competition.....75@75&5%
Standard.....60&10&5@60&10&10%
Extra.....50&10@60%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee....50&10 @ 60%

**Huskers—**

Blair's Adjustable..... ....₱ gr $8.00
Blair's Adjustable Clipper... ..₱ gr 7.00
Hubbard's Solid Steel.....₱ gr 4.50

**Indurated Fiber-Ware**—See Ware, Indurated Fiber.—

**Irons.**

*Sad—*

From 4 to 10, at factory....₱ 100 lb. $2.30@$2.40
Self-Heating.....₱ doz $9.00 net
Self-Heating, Tailors'....₱ doz $18.00 net
Mrs. Pott's Irons.....40@40&10%
Enterprise Star Irons.....40@40&10%
Cold Handle Sad Irons .....40&10@50%

Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons..... .....25%
B. B. Sad Irons, ₱ lb..... .3 @3¼¢
Combined Fluter and Sad Iron, ₱ doz, $15.00.....15%
Fox Reversible, Self-Fluter ₱ doz $24.00
Chinese Laundry (N.E. Butt Co.) 85¢, 15%
New England.....5¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible.....20@20&5%
National Self-Heating.....30%

*Soldering—*

Soldering Coppers..... ₱ lb 22 @ 23¢
Covert's Adjustable, list Jan. 1, 1886. 35&2%

**Irons,** Pinking, per doz., 65¢.

**Jack Screws**—See Screws.

**Jacks, Wagon.**

Daisy..... .....25%

## Kettles—

| | Spun. | Stamped. |
|---|---|---|
| Brass, 7 to 17 in., ₱ lb.... | 24¢ | 22 ¢ |
| Brass larger than 17 in., ₱ lb..... | 20¢ | 24½¢ |

Enameled and Tea—See Hollow-Ware.

**Keys—**

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₱ doz $4.00, 15%
Wollensak Tinned.....50&10%

**Knife Sharpeners**—See Sharpeners, Knife.

**Knives.**

*Butcher, Shoe, &c—*

Wilson's Butcher Knives.....25@30%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c..... .40%
Nichols' Butcher Knives.....40&10%
Ames' Shoe Knives.....20@25%
Ames' Bread Knives, ₱ doz $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $3.00
Corn, Auburn Mfg. Co. Crescent.....$3.50

*Corn—*

Bradley's..... .....10%
Wadsworth's..... .. .....25%

*Drawing—*

Witherby, P. S. & W ..... Mix ..... New Haven..... } .75 @ 75&10 %
Merrill .....60&10@60&10&5%
Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓&5%
Wilkinson's Folding.....25@25&5%

*Hay and Straw—*

Lightning, Mfrs'. price ₱ doz $18.00, 25% But jobbers cut this price freely, often selling at $8 @ $8.50.
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₱ doz $11.00@$11.50
Heath's.....₱ doz $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay .....₱ doz $8.00 @ $9.00

*Mincing.*

Am. (2d quality), ₱ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....Net
Lothrop's.....20&10%
Smith's, ₱ doz, Single, $2.00; Double, $3 40@45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₱ doz $3.00 .25%
Buffalo Double Adj'table.₱ doz $3.00 .25%

**Knobs—**

Door Mineral.....60@65%
Door Por. Jap'd.....70@75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₱ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

## Ladies.—

Melting, Sargent's.....55&10%
Melting, Reading. .....35&10%
Melting, Monroe's Pat...₱ doz $4.00, 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

**Lanterns—**

*Tubular—*

Plain with Guards, ₱ doz.....$4.00@4.25
Lift Wire, with Guards.....$4.50@4.75
Square Plain, with Guards.....$4.00@4.25
Sq. Lift Wire, with Guards.....$4.25@4.50
Without Guards, 25¢ ₱ doz less.

*Miscellaneous.*

Police, Small, $6.00; Medium, $7.25; Large, $9.75.....30@35%

**Lawn Mowers**—See Mowers, Lawn.

**Leaders, Cattle.**

Humason, Beckley & Co.'s.....70%
Sargent's..... .....60%&10%
Hotchkiss..... ..... .....30%
Peck, Stow & W. Co..... ...60&10%

**Lemon Squeezers**—See Squeezers, Lemon.

**Lifters, Transom.**

Wollensak's: Class 3 and 4, Bronzed Iron.....50% Class 3 and 4, Bronze Metal.....25% Class 3 and 4, Brass.....35% Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Reiher's, list Aug. 1, 1889- Bronzed Iron Rods.....50&10&10&2% Brass, Real Bronze or Nickel Plate..30%

Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's Universal.....40@40&10%

**Lines—**

Cotton and Linen Fish, Draper's .....50%
Draper's Chalk.....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson, Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton..... .....45%
Wire Clothes.. Nos. 15 19 20 100 ft. ..... .... $4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₱ doz $7.50, 20%

**Locks, &c.—**

*Cabinet—*

Eagle, Gaylord Parker and Corbin... } List March, '84, rev Jan. 1, '85..33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 86 to 96..... .....30%
Stoddard Lock Co.....30&33⅓&%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&2%
"Champion" Cab. and Combin...33⅓&%
Yale.....net prices
Romer's.....25%

*Door Locks, Latches, &c*

R. & E. Mfg. Co., list Mar. 20, 1889..... } 60&10@60 &10&10 Much lower net prices often made.
Mallory, Wheeler & Co., list July, '88..... }
Sargent & Co., list Aug. 1, '88 }
Reading Hardware Co., list Feb. 2, '88..... }
Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&25%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deitz Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Shepardson or U. S.....35%
Seed's N. Y. Hasp Lock.....25%

*Padlocks—*

List Dec. 23, '84. .....75@75&10%
Brittan, Graham & Mathes.....75&10%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....25&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Deitz.....40%
Champon Padlocks.....40%
Hotchkiss.....30%
Star.....45%
Horseshoe.....₱ doz, $9. 40@40&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Pat.....25%
Scandinavian.....90@90&10%
E. T. Fraim's Keystone Scandavian: "Nos. 119, 120, 130 and 140... ..90&10% Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker Barry & Co. No. 41 line.....45&5% No. 31 line .....60&5% No. 21 line.....75@5%

*Sash, &c.*

Clark's, No. 1, $10; No. 2, $8 ₱ gr. ..33⅓&
Ferguson's ..... .....33⅓&
Morris and Triumph, list Aug. 16, 1886, 60&2%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓&
Reading.....60%&10@60%&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₱ gr $4.00
Common Sense, Nickel Plated ₱ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model .....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60@60&10%
Hugunin's Sash Balances .....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60&10@60&10&5%
Liesche's, Nos. 100 and 110, ₱ gr $8; 105, $10.00. .....20&10%
Davis, Bronze, Barnes Mfg. Co.... . 50%
Champion Safety, list March 1, 1888 55@55&5%
Security.....70%
Buckeye.....₱ gro $4.80

**Lumber Tools**—See Tools, Lumber

**Lustre—**

Four-ounce Bottles....₱ doz, $1.75; ₱ gross..... . .....$17.00

## Machines.

*Boring—*

| | Without Augers. | Upright. | Angular. | |
|---|---|---|---|---|
| Douglas..... | $5.50 | $6.75 | ..... | 50% |
| Snell's, Rice's Pat. | 5.50 | 6.75 | ..40 | &10&10 |
| Jennings ..... | 5.50 | 6.75 | ..45 | @45&10 |
| Other Machines... | 2.35 | 2.75 | ..... | |
| Phillips' Patent with Augers ... | 7.00 | 7 50 | ..... | |

*Fluting.*

Knox, 4½-inch Rolls .....$3.25 each } 35%
Knox, 6-inch Rolls..... .....$3.60 each }
Eagle, 3½-inch Roll, $2.15.....35%
Eagle, 5½-inch Roll, $2.85.....35%
Crown, 4½ in., $5.50; 6 in., $4.00; 8 in., $3.50 each .....35%
Crown Jewel, 6 in .....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter .....each, $1.50
Geneva Hand Fluter, White Metal ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00. ... .....30%
Shepard Hand Fluter, No. 85 ₱ doz $15.30 ..... .. .. ..... . 40%

Shepard Hand Fluter, No. 110 ₱ doz $11.00.....40%
Shepard Hand Fluter, No. 95 ₱ doz $8.00.....40%
Clark's Hand Fluter, ₱ doz $15.00.....35%
Combined Fluter and Sad Iron, ₱ doz $15.00.....30%
Buffalo ..... ₱ doz $10.00.....10%

*Hoisting—*
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Differential Pulley Block...40%
Energy Mfg. Co's.....25%

**Mallets.**

Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

**Mattocks.** Regular list..... .....60&10%

**Measures—**

Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

**Meat Cutters**—See Cutters, Meat.

**Mills.**

*Coffee—*
Box and Side, List Jan. 1, 1888.....60&2%
American, Enterprise Mfg Co.20&10&30%
The Swift, Lane Bros.....20&10%

**Mincing Knives** — See Knives, Mincing.

**Molasses Gates**—See Gates, Molasses.

**Money Drawers** — See Drawers, Money.

**Mowers, Lawn.**

Leading makers.....60@60&10&5%
Other makers.....60&10&5@60&10&10%
Pennsylvania.....60%
Continental..... .....60%
New Model. .....60&10&5%
New Quaker City..... ..60&10&5%
Great American.....60&10&5%

**Muzzles—**

Safety.....₱ doz, $3.00, 25%

# Nails.

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15,'89..75@75&5%
Tack Mfrs.' list.....60&10&10%
Wire Nails, Standard Penny.
Card June 1, '89, base.....$2.50 @ $2.60

*Horse—*

| Nos. | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|
| Ausable.... | .28¢ | 26¢ | 25¢ | 24¢ | 23¢, 25&10@25&10&10% |
| Clinton, Fin. | | | | | .10½ @ 11¢, net |
| Essex .... | 28¢ | 26¢ | 25¢ | 24¢ | 23¢, 25&10@25&10&10% |
| Lyra .... | .25¢ | 23¢ | 22¢ | 21¢ | 20¢, 40&10&5@50% |
| Snowden | 25¢ | 23¢ | 22¢ | 21¢ | 20¢, 40&10&5@50% |
| Putnam.... | .23¢ | 21¢ | 20¢ | 19¢ | 18¢, 1000 ℔ in year 15% |
| Vulcan.... | .23¢ | 21¢ | 20¢ | 19¢ | 18¢..12½&5% |
| Northwest'n. | 25¢ | 23¢ | 22¢ | 21¢ | 20¢, 25@25&5% |
| Globe. .... | .23¢ | 21¢ | 20¢ | 19¢ | 18¢..20&2½% |
| Boston.... | .23¢ | 21¢ | 20¢ | 19¢ | 18¢..20&2½% |
| A. C..... | 25¢ | 23¢ | 22¢ | 21¢ | 20¢, 25&10@33⅓&5% |
| C. B.-K..... | .25¢ | 23¢ | 22¢ | 21¢ | 20¢, 25&10@33⅓&5% |
| Champlain | .28¢ | 6¢ | 25¢ | 24¢ | 23¢, 5%&1C&10% |
| New Haven. | .28 | 26¢ | 25¢ | 24¢ | 23¢, 25&10@25&10&10% |
| Saranac.... | .23¢ | 21¢ | 20¢ | 19¢ | 18¢...20&10% |
| Champion... | .25¢ | 23¢ | 22¢ | 21¢ | 20¢, 10&10&10% |
| Capewell.... | .28¢ | 26¢ | 5¢ | 24¢ | 23¢, 35&5@35&10% |
| Star..... | .23¢ | 21¢ | 0¢ | 19¢ | 18¢, 10&10@10&12½% |
| Anchor.... | .23¢ | 21¢ | 20¢ | 19¢ | 18¢ .....35% |
| Western.... | .23¢ | 21¢ | 20¢ | 19¢ | 18¢...40&10% |
| Empire Bronzed. | | | | | .....14 ₱ ℔. |

*Picture—*
Brass Head, Sargent's list.....50&10&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list..40&10%
Niles' Patent.....40%

**Nail Pullers.**—See Pullers, Nail.

**Nail Sets.**—See Sets, Nail.

**Nut Crackers.**—See Crackers, Nut.

**Nuts—**

Nuts, off list Dec. 18,1889: Square. Hex.
Hot Pressed..... 5.55¢ 6.10¢
Cold Punched..... 5.10¢ 5.60¢
In lots less than 100 ℔, ₱ ℔, add ½¢; 1-℔ boxes, add 1¢ to list.

**Oakum—**
Government.....₱ ℔ 7@7½¢
U. S. Navy.....₱ ℔ 6@6¼¢
Navy.....₱ ℔ 5¼¢@5½¢

**Oilers—**

Zinc and Tin .....65@65&10%
Brass and Copper .....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammers, Old Pattern, same list .....40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper .....50%
Broughton's Zinc.....60%
Broughton's Brass .....50%
Gem P. D. & Co. .....₱ gro. $2
Steel, Draper and Williams.....50%

**Openers, Can.**

Messenger's Comet.....₱ doz $3.00, 25%
American.....₱ gross $3.00
Duplex.....doz 25¢, 15@20%
Lyman's.....₱ doz $3.75, 20%
No. 4 French.....₱ doz $2.25, 55@60%
No. 5, Iron Handle.....₱ gr $6.00, 45@50%
Eureka.....₱ doz $2.50, 10%
Sardine Scissors.....₱ doz $2.75@3.00
Star.....₱ doz $2.75
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50 50&10&10%
Excelsior, No. 1, $2.50; No. 2, $1.50...40%
World's Best, ₱ gross, No. 1, $12.00 No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₱ doz $3.00..... .....35&5%
Domestic, ₱ doz $2.50.....45%
Champion ₱ doz $2.00..... ..5¢

**Packing, Steam—**
*Rubber—*

Standard.....60&5@65%
Extra .....50@50&5%
N. Y. B. & P. Co., Standard..40&10@50%
N. Y. B. & P. Co., Empire....60&5@65%
N. Y. B. & P. Co., Salamander. ₱ ℔ 65¢, 10@15%
Jenkins' Standard. ₱ ℔ 80¢....25@25&5%

*Miscellaneous—*
American Packing.....10¢@11¢ ₱ ℔
Russia Packing .....14¢ ₱ ℔
Italian Packing .....13¢@14¢ ₱ ℔
Cotton Packing ..... .....15¢@17¢ ₱ ℔
Jute.....7¢@8¢ ₱ ℔

**Padlocks**—See Locks.

**Pails.**

*Galvanized Iron—*

| | Quarts | 10 | 12 | 14 |
|---|---|---|---|---|
| Hill's Light Weight, ₱ doz. | | $2.75 | 3.00 | 3.25 |
| Hill's Heavy Weight, ₱ dz. | | 3.00 | 3.25 | 3.75 |
| Whiting's..... | | 2.75 | 3.00 | 3.25 |
| Sidney Shepard & Co..... | | 2.35 | 2.85 | 3.05 |
| Iron Clad ..... | | 2.50 | 2.75 | 3.00 |
| Fire Buckets..... | | 2.75 | 3.25 | 3.50 |

Buckets, see Well Buckets.

*Indurated Fibre Ware—25%*
Star Pails, 12 qt .....₱ doz $6.00
Fire, Stable and Milk, 14 qt ..₱ doz $7.80

*Standard Fibre Ware—*

| | Plain. | Decr'd |
|---|---|---|
| Water Pails, 12 qt., per doz. | $4.00 | $4.50 |
| Dairy Pails, 14 qt., per doz. | 4.50 | 5.00 |
| Fire Pails, No. 1, 12 qt. per doz | 4.50 | |
| Fire Pails, No. 2, 14 qt. per doz | 5.00 | |
| Sugar Pails..... | 6.00 | 6.50 |
| Horse Pails..... | 5.50 | |
| Buggy Pails..... | 4.00 | |
| Slop Jars (bal. trap)..... | 8.00 | 9.00 |
| Chamber Pails, 14-qt..... | 6.50 | 7.50 |

**Pans.**

*Dripping.*
Small sizes..... .....₱ ℔ 6¼¢
Large sizes..... .....₱ ℔ 5¼¢

*Fry—*
Standard List:

| No..... | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| ₱ doz. | $3.00 | $3.75 | $4.25 | $4.75 | $5.25 |
| No..... | 5 | 6 | 7 | 8 | |
| ₱ doz. | $6.00 | $7.00 | $8.00 | $9.00 | |

Polished, regular goods.....70&10%
Acme Fry Pans .....60&10%

**Paper and Cloth—**

*Sand and Emery—*
List April 19, 1886.....50@50&10%
Sibley's Emery and Crocus Cloth.....30%

**Parers.**

*Apple.*
Advance..... ₱ doz $4.75
Baldwin..... ₱ doz 5.25
Bonanza..... ₱ doz 5.00
Champion..... ₱ doz 7.25
Daisy..... ₱ doz 4.00
Dandy ..... ₱ doz 7.50
Eureka, 1888..... .....each 16.00
Family Bay State..... ₱ doz 12.00
Favorite ..... ₱ doz 5.00
Gem..... ₱ doz 5.25
Gold Medal..... ₱ doz 4.00
Ideal..... ₱ doz 4.00
Improved Bay State..₱ doz 27.00 @ 30.00
Little Star..... ₱ doz 4.50
Monarch..... ₱ doz 13.50
New Lightning..... ₱ doz 5.50
Oriole..... ₱ doz 4.00
Penn..... ₱ doz 4.00
Perfection..... ₱ doz 4.00
Pomona..... ₱ doz 4.00
Rocking Table..... ₱ doz 6.00
Turntable..... ₱ doz 4.50
Victor..... ₱doz 13.50
Waverly ..... ₱ doz 4.00
White Mountain..... ₱ doz 4.00
72..... ₱ doz 4.25
76..... ₱ doz 5.75
78..... ₱ doz. 6.50

*Potato—*
White Mountain ..... ₱ doz $4.50
Antrim Combination..... ₱ doz $5.50
Hoosier..... ₱ doz $13.50
Saratoga..... ₱ doz $5.50

**Pencils—**

Faber's Carpenters'..... ..high list 50%
Faber's Round Gilt..... ₱ gro $5.25
Dixon's Lead..... ₱ gro $4.50
Dixon's Lumber..... ₱ gro $6.75
Dixon's Carpenters' ..... .....40&10%

**Picks—**

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10%

**Picture Nails.**—See Nails, Picture.

**Pinking Irons.**—See Irons, Pinking.

**Pins.**

*Bow—*
Humason, Beckley & Co.'s.....60&10%
Sargent & Co's....$17 and $18...60&10%
Peck, Stow & W. Co... 50&10&50&10&5%

*Curtain—*
Silvered Glass.....net
White Enamel.....net

*Escutcheon,*
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

**Pipe, Wrought Iron—**

List September 18, 1889.

1¼ and under, Plain .....47½%
1¼ and under, Galvanized .....40%
1½ and over, Plain.....60%
1½ and over, Galvanized .....47½%

Boiler Tubes, Iron.
1¾ and under..... .....45%
2 to 4 inch..... .....50%
4-inch and larger..... .....52½%

**Planes and Plane Irons—**

*Wood Planes—*
Molding.....45&2%
Bench, First Quality.....55&2%
Bench, Second Quality.....60&2%
Bailey's (Stanley R. & L. Co.). ...40&10%

*Iron Planes—*
Bailey's (Stanley R. & L. Co.)..... 40&10@40&10&10%
Miscellaneous Planes (Stanley R. & L. Co.) .....20&10@20&10&10%
Victor Planes (Stanley R. & L. Co.). ..... 20&10@20&10&10%
Steer's Iron Planes.....35@35&10%
Meriden Mal. Iron Co.'s.....40@40&10%
Davis's Iron Planes .....40@40&10%
Birmingham Plane Co.....50@50&10%
Gage Tool Co.'s Self-Setting.....20&10%
Chaplin's Iron Planes .....40@40&10%
Sargent's ..... 30&10@30&10&10%
Standard Tool Co.....50@50&5%

*Plane Irons—*
Butcher's.....$5.00@$5.25 to 2
Buck Bros .....30%
Auburn "Thistle..... ....
Ohio..... } 35&2%
Sandusky.....
S. & I. J. White.....25%

**Plates.**

Felloe .....₱ ℔ 6¢@6½¢

**Pliers and Nippers—**

Button's Patent.....30&10@40%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz .....20&10@33⅓&5%
Humason & Beckley Mfg. Co..50@50&10%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers .....40%
Russell's Parallel.....25%
P. S. & W. Cast Steel .....50%
P. S. & W. Tinners' Cutting Nippers, add 6% dis 10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₱ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

**Plumbs and Levels—**

Regular List .....70&10@70&10&10%
Disston's.....45&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis' Inclinometers .....10&10%

**Poachers.**

*Egg.*
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....25%

**Police Goods.**

R. I. Tool Co., Handcuffs, $15.00₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods..... .25%

**Polish, Metal.**

Prestoline.....20&10%
Prestoline Paste..... .....33⅓%
Gaston's Silver Compound.....33⅓%

**Pokes, Animal—**

Bishop's I. X. L. ..... ₱ doz $6.00
Bishop's O. K..... ..... ₱ doz $5.25
Bishop's Pioneer..... ₱ doz $2.75
Bishop's American..... ₱ doz $2.75

**Polish, Stove.**

Joseph Dixon's..... ₱ gro $6.00, 10%
Gem..... ₱ gro $4.50, 10%
Gold Medal..... ₱ gro $6.00, 25%
Mirror ..... ₱ pro $6.00, —%
Lustro ..... ₱ gro $4.75
Ruby ..... ₱ gro $3.75
Rising Sun, 5 gro lots ..... ₱ gro $5.50
Dixon's Plumbago..... ₱ ℔ 8¢
Boynton's Noon Day, ₱ gro .....13.00
Parlor Pride Stove Enamel..₱ gro 3 cans
Yates' Liquid, 2 3 5 10 gal...8¢ ₱ gal ...$0.90 .80 .70 .60
Yates Standard Paste Polish, 10-℔ cans, ₱ ℔ 15¢
Jet Black ..... ₱ gro $3.50
Japanese. ..... ₱ gro $3.50
Fireside..... ₱ gro $2.50
Diamond O. K. Enamel..... ₱ gro $19.00
Bonnell's Liquid Stove Polish..₱ gro $9.00
Bonnell's Paste Stove Polish..₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans ..... .....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans ..... .....12½¢
Nickel Plate Paste ..... ₱ gro $6.00

**Poppers, Corn—**

Round or Square, 1 qt..₱ gr $10.00@10.50
Round or Square, 1½ qt..₱ gr $15@15.50
Round or Square, 2 qt...₱ gr $18.50@19.00

**Post Hole and Tree Augers and Diggers**—See Diggers, Post Hole, &c.

**Potato Parers**—See Parers, Potato.

**Pots.**

*Glue—*
Tinned.....40%
Enameled.....40&5%
Family, Howe's "Eureka" .....40%
Family, L. F. C.'s "Handy" .....50%

**Presses.**

*Fruit and Jelly—*
Enterprise Mfg. Co.....20&10@30%
Henis ..... ₱ doz $2.50
Shepard's Queen City ..... .....40%

**Pruning Hooks and Shears.**—See Shears.

**Pullers.**

*Nail.*
Curtiss Hammer..... ₱ doz $9.00
Giant, No. 1..... ₱ doz. $13.00, 10%
Giant, No. 2..... ₱ doz, $15.00, 25%
Pelican..... ₱ doz, $9.00, 25%

**Pulleys—**

Hot House, Awning, &c.....60&10%
Japanned Screw..... ..... 60&10%
Brass Screw.....60&10%
Japanned Side.....60⅔&10%
Japanned Clothes Line.....60&10%
Empire Sash Pulley.....55@60%
Moore's Sash, Anti-Friction.....50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70 .....50%
Hay Fork, "F" Common and Pat. Bushed ..... .....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating ...60%
Shade Rack ..... .....45%
Tackle Blocks.....See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00..... .....40

**Pumps—**

Cistern, Best Makers .....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper Goods.70@70&5%

**Punches—**

Saddlers' or Drive, good, ₱ doz...60@65¢
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co's Springfield Socket.50&5%
Spring, good quality....₱ doz $2.50@2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring and Check ..40%
Solid Tinners', P.S.&W.Co., ₱ doz$1.44, 55%
Tin'rs' Hollow Punches P.S.&W.Co.20&2%
Rice Hand Punches .....15%
Avery's Revolving.....40%
Avery's Saw-Set and Punch. See Saw Sets.

# Rail—

Sliding Door, Wr't Brass, ₱ ℔ 35¢.....15%
Sliding Door, Bronzed Wr't Iron..₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%
Barn Door Light. In. ½ ¾ 1
Per 100 feet.....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet....$2.15 2.70 3.35...net
Terry's Steel Rail, ₱ foot.....4½¢
Victor Track Rail, 7¢ ₱ foot.....50&5%
Carrier Steel Rail, ₱ foot .....4½¢
Moore's Wrought Iron.....25%

**Rakes—**

Cast Steel, Association goods .....70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable.....70@70&5%
Gibbs Lawn Rake.....$12.00, 50&15
Canton Lawn Rake..... .$9.00, 50&10
Ft. Madison Prize Bow Brace and Peerless ..... ....65%
Fort Madison Steel Tooth Lawn Rake, $6.00..... .....25%

**Razor**

J. R. Torrey Razor Co .....20%
Wostenholme and Butcher, $10.00 to £, 10%
Jordan's AAA1, list Nov. 1, 1889.....50%
Jordan's Old Faithful, list Nov. 1, '89.50%
Electric.....List net

**Razor Strops**—See Strops, Razor.

**Rings and Ringers.**

*Bull Rings—*
Union Nut Co. .....55%
Sargent's..... .....60&10@70&5%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co's..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

*Hog—*
Top of the Hill Ringers.....₱ doz $2.00
Top of the Hill Rings. .....₱ doz $1.25
Hill's Improved Ringers . . .₱ doz $4.25
Hill's Old Style Ringers..... ₱ doz $2.75
Hill's Tongs..... .....₱ doz $4.50
Hill's Rings..... .....₱ doz bxs $2.15@2.35
Perfect Rings..... ₱ doz bxs $1.60@1.70
Perfect Ringers..... ₱ doz $2.15@2.25
Blair's Hog Ringers..... ₱ doz $2.25@2.50
Blair's Hog Rings..... ₱ doz 90¢@$1.00
Champion Ringers..... ....₱ doz $2.00
Champion Rings, Double.....₱ doz $2.25
Brown's Ringers..... .....₱ doz $2.00
Brown's Rings.....₱ doz $1.25@1.30

**Rivets and Burrs—**

Iron, list Nov. 17, '87.....40%
Copper..... .....50&10%
Copper'd Iron, Be'tina Brand.....40%

**Rivet Sets**—See Sets.

**Rods—**

Stair, Brass .....25&2%
Stair, Black Walnut .. .....₱ doz 40¢

**Rollers—**

Barn Door, Sargent's list .....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller .....70%

**Rope—**

Manufacturers' prices:
Manila...⅜ in. and larger ₱ ℔ 15 ¢
Manila.....⅜ in. ₱ ℔ 15½¢
Manila.....¼ and 5-16 in. ₱ ℔ 15¾¢
Manila Tarred Rope..... ₱ ℔ 14½¢
Manila, Hay Rope..... ₱ ℔ 16 ¢
Sisal...¼ inch and larger ₱ ℔ 12 ¢
Sisal.....⅜ in. ₱ ℔ 12½¢
Sisal.....¼ and 5-16 in. ₱ ℔ 13¾¢
Sisal, Hay Rope..... ₱ ℔ 12 ¢
Sisal, Tarred Rope..... ₱ ℔ 11½¢
Sisal, Medium Lathe Yarn. ₱ ℔ 11 ¢
Cotton Rope..... ₱ ℔ 15@18¢ net
Jute Rope..... ₱ ℔ 7½¢

1½% for cash in 10 days.

*Wire—*
List May 1, 1886.
Iron.....32½&2½%
Iron, Galvanized.....40&2½%
Cast Steel..... .....40&2½%

**Rules—**

Boxwood.....80&10&10@80&10&10&5%
Ivory.....50@50&10%
Starrett's Rules and Straight Edges, Steel..... .....25&10%

# Sad Irons—See Irons, Sad.

**Sand and Emery Paper and Cloth**—See Paper and Cloth, Sand and Emery.

**Sash Cord**—See Cord, Sash.

**Sash Locks**—See Locks, Sash.

**Sash Weights**—See Weights, Sash.

**Sausage Stuffers or Fillers**—See Stuffers or Fillers, Sausage.

**Saws—**

Disston's Circular.....45@45&5% } Extras sometimes given by jobbers.
Disston's Cross Cuts..... ....45@45&5%
Disston's Hand 25@25&5%

Atkins' Circular Shingle and Heading 50¢
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 30¢
Atkins' Champion and Electric Tooth X Cuts ₱ foot 24@25¢
Atkins' Hollow Back X Cuts. ₱ foot 18¢
Atkins' Mulay, Mill and Drag 40%
Atkins' One-Man Saw, with handles, ₱ foot 32¢
W. M. & C., Hand 30&5@30&10%
W. M. & C., Champion X Cuts, Regular ₱ foot 24@26¢
W. M. & C. X Cuts, Thin Back ₱ foot 27@28¢
Peace Circular and Mill 45&10%
Peace Hand Panel and Rip 20&10@20&10&10%
Peace Cross Cuts, Standard ₱ foot 25¢
Peace Cross Cuts, Thin Back ₱ foot 27@28¢
Richardson's Circular and Mill 45@45&10%
Richardson's X Cuts, No. 1, 30¢; No. 2, 27¢; No. 3, 24¢

*Hack Saws—*
Griffin's, complete 40&10@50%
Griffin's Hack Saw, Blades 40&10@50%
Star Hack Saws and Blades 25%
Eureka and Crescent 25%

*Scroll—*
Lester, complete, $10.00 25%
Rogers, complete, $4.00 25%
Barnes' Builders' and Cabinet Makers', $15 25%
Barnes' Scroll Saw Blades 35%

**Saw Frames**—See Frames, Saw.

**Saw Sets**—See Sets, Saw.

**Saw Tools**—See Tools, Saw.

**Scales—**

Hatch, Counter, No. 171, good quality, ₱ doz $21.00
Hatch, Tea, No. 161 ₱ doz $6.75@$7.00
Union Platform, Plain $2.10@2.20
Union Platform, Striped $2.20@2.30
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls 30@30&10%
Riehle Bros.' Platform 40%

**Scale Beams**—See Beams, Scale.

**Scissors, Fluting** 45%

**Scrapers—**

Adjustable Box Scraper (S. R. & L. Co.) $6.50 30&10%
Box, 1 Handle ₱ doz $4.00, 10%
Box, 2 Handle ₱ doz $6.00, 10%
Defiance Box and Ship 20&10%
Foot 50&10@60%
Ship, Common ₱ doz $3.50 net
Ship, R. I. Tool Co 10¢

**Screen Window and Door Frames**—See Frames.

**Screw Drivers**—See Drivers, Screw.

**Screws.**

*Bench and Hand—*
Bench, Iron 55&10@55&10&10%
Bench, Wood, Beech ₱ doz $2.25
Bench, Wood, Hickory 20&10%
Hand, Wood 25&10@25&10&5%
Lag, Blunt Point, list Jan. 1, 1890. 75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 75%
Bed 25&5%
Hand Rail, Sargent's 66⅔&10%
Hand Rail, H. & B. Mfg. Co. 70&10@75%
Hand Rail, Am. Screw Co. 75%
Jack Screws, Millers Falls list 50@50&5%
Jack Screws, P. S. & W. 35%
Jack Screws, Sargent 60&10@60&10&5%
Jack Screws Stearns' 40@40&10%

*Cork—*
Humason & Beckley Mfg. Co. 40&10@50%
Williamson's 33⅓@33⅓&5%
Howe Bros & Hulbert 35%

*Machine—*
Flat Head, Iron 55%
Round Head, Iron 50%

*Wood—*
List March 1, 1889.
Flat Head Iron 50%
Round Head Iron 40%
Flat Head Brass 45%
Round Head Brass 35%
Flat Head Bronze 45%
Round Head Bronze 35%
Extra 5 @ 10 % often given.
Rogers' Drive Screws 66⅔%

**Scroll Saws**—See Saws, Scroll.

**Scythe Snaths**—See Snaths, Scythe.

**Sets.**

*Awl and Tool.*
Aiken's Sets, Awls and Tools, No. 20, ₱ doz $10.00 55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9. 25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12, 2, $18 25%
Henry's Combination Haft ₱ doz $6.50
Brad Sets, No. 42, $10.50; No. 43, $12.50. 70&10&5%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 50&10%

*Nail—*
Square ₱ gr., $4.00@$4.25
Round ₱ gr. $3.25
Buck Bros 27½%
Cannon's Diamond Point ₱ gr., $12, 20%

*Rivet.*
Regular list 50&10%

*Saw—*
Stillman's Genuine ₱ doz $5.00@7.75, 40&5%
Stillman's Imita ₱ doz $3.25@5.25, 40&5@40&10%
Common Lever ₱ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00. 40&10@50%
Leach's. No. 0, $8.00; No. 1, $15, 15@20%
Nash's 20&10@20&10&10%
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer 30&5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine $13.00, 50&10%
Aiken's Imitation $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star, ₱ No. 15, $5.50; 20& 10@20&10@10%
Leopold 40&10@50%
Atkin's Lever ₱ doz No. 1, $6.00
Atkin's Criterion ₱ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 40&10%
Avery's Saw Set and Punch 50%
Chieftain H. R. Co.'s Superior ₱ doz $15, 50%

**Sharpeners, Knife.**

Parkin s.
Applewood Handles ₱ doz $6.00, 40%
Rosewood or Cocobolo ₱ doz $9.00, 40%

**Shaves, Spoke.**

Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) 40&10%
Stearns' 30&10%
Cincinnati 25&10%

**Shears—**

American (Cast) Iron 75&10@75&10&5%
Barnard's Lamp Trimmers ₱ doz $3.75
Tinners' 30&2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears 33⅓%
First quality C. S. Trimmers 80@80&10%
Second quality C. S. Trimmers. 80&10@80&10&10%
Acme Cast Shears 10&10%
Diamond Cast Shears 10%
Clipper 10&10%
Victor Cast Shears 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Chicago Drop Forge & F. Co., Solid Steel Forged 60%
Clauss Shear Co., Tapanned 70%
Clauss Shear Co., Nickeled, same list. 60%
Electric List net

*Pruning Shears and Hooks.*
Disston's Combined Pruning Hook and Saw ₱ doz $18.00, 20&10%
Disston's Pruning Hook, ₱ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools 40%
Pruning Shears, Henry's Pat, ₱ doz $3.75@4.00 net
Henry's Pruning Shears, ₱ doz $4.25@ 4.50 net
Wheeler, M. & C. Co.'s Combination, ₱ doz $12.00, 20%
Dunlap's Saw and Chisel, ₱ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co. 60%

*Tinners', &c.—*
Shears and Snips (P. S. & W.) 20@25%
Snips, J. Mallinson & Co. 33⅓%

**Sheaves—**

*Sliding Door—*
M. W. Co., list July, 1888 50&10@60&5%
R. & E., list Dec. 18, 1885 55&20%
Corbin's list 60&10&2%
Patent Roller 60&10&2%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 60&2%
Moore's Anti-Friction 50%

*Sliding Shutter—*
R. & E. list Dec. 18, 1885 60&10&2%
Sargent's list 60&10%
Reading list 60&10&10%

**Ship Tools—**

L. & I. J. White 20&5%

**Shoes, Horse, Mule, &c.—**

*Horse—*
Burden's, Perkins', Phœnix, at factory. $1.00

*Mule—*
Add $1 ₱ keg to above prices.

*Ox, Wrought—*
Ton lots ₱ ₱ 9¢
1000 ₱ lots ₱ ₱ 9½¢
500 ₱ lots ₱ ₱ 10¢

**Shot—**

*(Eastern prices 2¢ off, cash, 5 days.*
Drop, ₱ bag, 25 ₱ $1.35
Drop, ₱ bag, 5 ₱ .32
Buck and Chilled, ₱ 25-₱ bag 1.80
Buck and Chilled, ₱ 5-₱ bag .37

**Shovels and Spades—**

Ames' Shovels, Spades, &c., list Nov. 1, 1885 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron 50&10%
Griffith's C. S. 60@60&10%
Griffith's Solid C. S. R. R. Goods 20%
Old Colony (Sanford Fork & Tool Co.) 35%
St. Louis Shovel Co. 20@20&7½%
Hussey, Binns & Co. 15@25%
Hubbard & Co. 20@20&7½%
Lehigh Mfg. Co. 50&10%
Payne Pettebone & Son, list January, 1886 30%
Remington's (Lowman's Pat.) 30&10@40%
Rowland's, Black Iron 50&10%
Rowland's Steel 60&5@60&10%

**Shovels and Tongs—**

Iron Head 60&10@60&10&5%
Brass Head 60&10&10%

**Sieves—**

Mann's Tin Rim 50&25%
Buffalo Metallic, S. S. & Co. 50&25%
Shaker (Barler's Pat.) Flour Sifters ₱ doz $2.00; ₱ gr $21.60
Electric ₱ gr $21.00
J. & W. Sifters ₱ doz 2.00
Hunter's ₱ doz $2.00
Smith's Adjustable Sifters ₱ doz $2.00
Smith's Adjustable Milk Strainer. ₱ doz $2.00
Smith's Adjustable T. & C. Strainer. ₱ doz. $1.25

*Sieves, Wooden Rim—*

| | Iron. | Plated. |
|---|---|---|
| Mesh 18, Nested, ₱ doz.. | 80¢ | $1.00 |
| Mesh 20, Nested, ₱ doz.. | 95¢ | 1.10 |
| Mesh 24, Nested, ₱ doz.. | $1.15 | 1.25 |

**Skeins, Thimble—**

Western list 75&5@75&10%
Columbus Wrt. Steel. Special net prices
Coldbrookdale Iron Co. 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 35%

**Slates—**

School, by case 50@50&10%

**Snaps, Harness, &c.—**

Anchor (T. & S. Mfg. Co.) 65%
Fitch's (Bristol) 50&10%
Hotchkiss 10%
Andrews 50%
Sargent's Patent Guarded 70&10&10%
German, new list 40&10%
Covert 50&2%
Covert, New Patent 50&5&2%
Covert, New R. E. 60&2%
Covered Spring 60&10&10%

**Snaths, Scythe.**

List 50&10@50&10&5%

**Soldering Irons**—See Irons, Soldering.

**Spittoons, Cuspidors, &c.**

*Standard Fiberware—*
Cuspidors, 8¼-inch, ₱ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

**Spoke Shaves**—See Shaves, Spoke.

**Spoke Trimmers**—See Trimmers, Spoke.

**Spoons and Forks—**

*Tinned Iron—*
Basting, Cen. Stamp. Co.'s list 70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list 70&10%
Buffalo S. S. & Co. 33⅓&2%

*Silver-Plated*—(4 mos. or 5% cash 30 days).
Meriden Brit. Co., Rogers 40, 15, 10&5%
C. Rogers & Bros. 40, 15, 10&5%
Rogers & Bro. 40, 15, 10&5%
Reed & Barton 40&10%
Wm. Rogers Mfg. Co. 40, 15, 10, 5&5%
Simpson, Hall, Miller & Co. 40, 15, 10&5%
Holmes & Edwards Silver Co. 40, 15, 10, 5&5%
L. Boardman & Son 60%

*Miscellaneous.*
Holmes & Edwards Silver Co.:
No. 67 Mexican Silver 50&10&5%
No. 30 Silver Metal 50&10&5%
No. 24 German Silver 50&10&5%
No. 50 Nickel Silver 50%
No. 40 Nickel Silver 50&10%
Rogers' Silver Metal 50, 10&5%
18% Rogers' German Silver 60&5%
22% Rogers' Nickel Silver 50&5%
German Silver 50@50&5
German Silver, Hall & Elton 50&5% cash
Nickel Silver 50&5@50&10&5% cash
Britannia 60%
Boardman's Nickel Silver 50&5% cash
Boardman's Britannia Spoons, case lots 60&5% cash

**Springs, Door.**

Torrey's Rod, regular size ₱ doz $1.30
Gray's, ₱ gr., $20.00 20%
Bee Rod ₱ gr., $20.00 20%
Warner's No. 1, ₱ doz, $2.50; No. 2, $3.30 40&10@50%
Gem (Coil), list April 19, 1886 10%
Star (Coil), list April 19, 1886 20%
Victor (Coil) 60@60&10%
Champion (Coil) 60&10@60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75.
Cowell's No. 1, ₱ doz, $18.00; No. 2, $15.00 50%
Rubber, complete, ₱ doz, $4.50 55&10%
Hercules 50%
Shaw Door Check and Spring 25@20@35%
Elliptic, Concord, Platform and Half Scroll 60@60&5%
Cliff's Bolster Springs 25%

**Squares—**

Steel and Iron } 80 &10%
Nickel-Plated } 80 &10%
Try Square and T Bevels 60&10@60&10&10%
Disston's Try Square and T Bevels 45&10%
Winterbottom's Try and Miter 30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares 40%
Avery's Bevel Protractor 50%

**Squeezers.**

*Fodder.—*
Blair's ₱ doz $2.00
Blair's "Climax" ₱ doz $1.25

*Lemon—*
Porcelain Lined, No. 1 ₱ doz $6.00, 25&30%
Wood, No. 2 ₱ doz $3.00, 35%
Wood, Common ₱ doz $1.70@1.75
Dunlap's Improved ₱ doz $3.75, 20%
Sammis. No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz 25&10%
Jennings' Star ₱ doz $2.50
The Boss ₱ doz $2.50
Dean's. Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant 50@50&5%
King 40&5%
Hotchkiss Straight Flash ₱ doz $12.00

**Standard Fiber Ware**—See Ware, Standard Fiber.

**Staples.**

*Blind—*
Barbed, ½ in. and larger ₱ ₱ 7@7½¢
Barbed, ⅝ in. ₱ ₱ 8@8½¢
Fence Staples, Galvanized } Same price as B'rb Wire, See Trd. Rep.
Fence Staples, Plain }

**Steelyards** 40&10@50%

**Stocks and Dies—**

Blacksmith's
Waterford Goods 40@40&10%
Butterfield's Goods 40@40&10%
Lightning Screw Plate 25@30%
Reece's New Screw Plates 33⅓&5@40%
Reversible Ratchet 30 %
Gardner 25%

**Stops, Bench.**

Morrill's ₱ doz $9, 50%
Hotchkiss's ₱ doz $5, 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's ₱ doz $3 10%
Cincinnati 25&10%

**Stone—**

Hindostan No. 1, 8¢; Axe, 8½¢; Slips No. 1, 4½¢
Sand Stone ₱ ₱ 2½¢
Washita Stone, Extra ₱ ₱ 20@21¢
Washita Stone, No. 1 ₱ ₱ 15@16¢
Washita Stone, No. 2 ₱ ₱ 11@12¢
Washita Slips, No. 1, Extra ₱ ₱ 37@40¢
Washita Slips, No. 1 ₱ ₱ 25@26¢
Arkansas Stone, No. 1, 4 to 6 in ₱ ₱ $1.50
Arkansas Stone, No. 1, 6 to 9 in ₱ ₱ $1.85
Turkey Oil Stone, 4 to 8 in ₱ ₱ 40¢
Turkey Slips ₱ ₱ $1.00@1.50
Lake Superior, Chase ₱ ₱ 16¢
Lake Superior Slips, Chase ₱ ₱ 31@32¢
Seneca Stone, Red Paper Brand ₱ ₱ 18@20¢
Seneca Stone, High Rounds ₱ ₱ 20@25¢
Seneca Stone, Small Whets. ₱ gro $24.00

**Stove Polish**—See Polish, Stove.

**Stretchers, Carpet.**

Cast Steel, Polished ₱ doz $2.2
Cast Iron, Steel Points ₱ doz 80¢
Socket ₱ doz $1.75
Gullard's 25@25&10%

**Strops, Razor—**

Genuine Emerson 60@60&5%
Imitation " ₱ doz $2.00, 20&10&5%
Torrey's 20%
Badger's Belt and Com ₱ doz $2.00
Lamont Combination ₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '80 50%
Electric List net

**Stuffers or Fillers, Sausage—**

Miles' "Challenge," ₱ doz $20, 50@50&5%
Perry ₱ doz No. 1, $15.00; No. 0, $21.00 50&5@50&10%
Draw Cut No. 4, each $30.00 20%
Enterprise Mfg. Co. 20&10@30%
Silver's 40&10%

**Sweepers, Carpet.**

Bissell No. 5 ₱ doz $17.00
Bissell No. 7 New Drop Pan. ₱ doz $19.00
Bissell, Grand ₱ doz $36.00
Grand Rapids ₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20,00
Magic ₱ doz $15.00
Jewel ₱ doz $17.00
Improved Parlor Queen, Nickeled ₱ doz $27.00
Japanned ₱ doz $24.00
Excelsior ₱ doz $22.00
Garland ₱ doz $18.00
Parlor Queen ₱ doz $24.00
Housewife's Delight ₱ doz $15.00
Queen ₱ doz $16.00
Queen, with band ₱ doz $18.00
King ₱ doz $30.00
Weed, Improved ₱ doz $18.00
Hub ₱ doz $16.00
Cog-Wheel ₱ doz $16.00
Conqueror ₱ doz $22.00
Easy ₱ doz $22.00
Monarch ₱ doz $22.00
Goshen ₱ doz $21.00
Advance ₱ doz $18.00
Ladies' Friend, No. 1, ₱ doz, $15.00; No. 2 ₱ doz $16.00
American ₱ doz $15.00
Grand Republic ₱ doz $36.00

**Tacks, Brads, &c.—**
List Oct. 19, 1889.
Carpet Tacks—
American Iron, Blued 70%
American Iron, Tin'd or Cop'd. 70%
Steel, Plain or Bright 70%
Steel Tinned or Coppered 70%
Swedes Iron, Blued 70%
Swedes Iron, Tinned or Cop'd. 70%
American Iron Cut Tacks 67½%
Swedes Iron Upholst'rs' Tacks, S. S. 70%
Swedes Iron Upholsterers' Tacks, Tinned, S. S. 70%
Swedes Iron Card and Upholsterers' Tacks, Lanc. 66⅔%
Swedes Iron Card and Upholsterers' Tacks, Tinned, Lanc. 66⅔%
Gimp and Lace Tacks Lanc., Swedes Iron 66⅔%
Gimp and Lace Tacks, Lanc., Swedes Iron, Tinned 66⅔%
Gimp and Lace Tacks, S. S. 70%
Gimp and Lace Tacks Tinned, S. S. 70%
Swedes Iron Basket or Trimmers' Tacks, Lanc. 66⅔%
Miners' Tacks, S. S. 70%
Bill-Posters' or Railroad Tacks, Lanc., Swedes 66⅔%
Bill-Poster's' or Railroad Tacks, S. S. 70%
Copper Tacks 60%
Copper Finish. & Trunk Nails 50%
Cigar Box Nails 50%
Zinc Glaziers' Points 50%
Picture-Frame Points 50%
Looking-Glass Tacks 50%
Brush Tacks 50%
Tin-Capped Trunk Nails 60%
Finishing Nails 65%
Trunk and Clout Nails, Black and Tinned 66⅔%
Common and Patent Brads 60%
Hungarian Nails 62½%
Basket and Chair Nails 62½%
Leathered Carpet Tacks 40%

*Miscellaneous—*
Double-Pointed 82½%
Wire Carpet Nails 50&10%
Plymouth Rock Steel Carpet Tacks. 25%

Extra 10&10@10&5% — See Trade Report

Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50&10%

**Tap Borers**—See Borers, Tap.

**Tapes, Measuring—**

American.....33⅓@33⅓&5%
Spring.....40%
Chesterman's, Regular list.....25@30%

**Thermometers—**

Tin Case.....80@80&10%

**Thimble Skeins**—See Skeins.

**Ties, Bale-** Steel

Standard Wire, list.....50&10&5%

**Tinners' Shears, &c.**—See Shears, Tinners', &c.

**Tinware—**

Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10&5%

**Tire Benders, Upsetters, &c—**
See Benders and Upsetters, Tire.

**Tools.**

*Coopers'—*
Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves, Cincinnati Tool Co.....20%
*Lumber.*
Ring Peavies, "Blue Line"...₩ doz $20.00
Ring Peavies, Common.....₩ doz $18.00
Steel Socket Peavies.....₩ doz $21.00
Mall. Iron Socket Peavies.....₩ doz $19.00
Cant Hooks, "Blue Line"...₩ doz $16.00
Cant Hooks, Common Finish..₩ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₩ doz $12.00
Hand Spikes....₩ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft. $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₩ doz $18.00
*Saw.*
Atkins' Perfection.....₩ doz $17.00
Atkins' Excelsior.....₩ doz $6.00
Atkins' Giant.....₩ doz $4.00

**Tobacco Cutters**—See Cutters, Tobacco.

**Transom Lifters**—See Lifters, Transom.

**Traps—**

*Game—*
Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%

*Mouse and Rat—*
Mouse Wood, Choker, ₩ doz holes, 11@12¢
Mouse, Round Wire.....₩ doz $1.50, 10%
Mouse, Cage, Wire.....₩ doz $2.50, 10%
Mouse, Catch-'em-alive....₩ dz $2.50 15%
Mouse, Bonanza.....₩ gr $10.00
Mouse Delusion.....₩ gr $10.00@$12.00
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz., 90¢; in full cases, ₩ doz.....75¢
Hotchkiss Imp. Rat Killer..₩ gro $18.50
Hotchkiss New Rat Killer...₩ gro $16.50
Schuyler's Rat Killer.....₩ gro $15.00

**Trowels—**

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering, 25@25&10%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

**Triers—**

Butter and cheese.....25%

**Trimmers, Spoke.**

Bonney's.....₩ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz. 55&10%
Douglas'.....₩ doz $9.00, 20%
Cincinnati.....25%

**Trucks, Warehouse, &c.—**

B. & L. Block Co.'s list, '82.....40%

**Tubes, Boiler—**

See Pipe.

**Twine—**

| Flax Twine— | BC. | B. |
|---|---|---|
| No. 9, ¼ and ⅛ ℔ Balls | 26¢ | 34¢ |
| No. 12, ¼ and ⅛ ℔ Balls | 25¢ | 33¢ |
| No. 18, ¼ and ⅛ ℔ Balls | 22¢ | 32¢ |
| No. 24, ¼ and ⅛ ℔ Balls | 22¢ | 32¢ |
| No. 36, ¼ and ⅛ ℔ Balls | 20¢ | 31¢ |
| No. 264, Mattrass, ¼ and ⅛ ℔ Balls | 52@54¢ | |
| Chalk Line, Cotton, ⅛ ℔ Balls | 25¢ | |
| Mason Line, Linen, ⅛ ℔ Balls | 55¢ | |

2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine).....15½¢
3-Ply Hemp, 1 ℔ Balls.....16¢@16½¢
3-Ply Hemp, 1¼ ℔ Balls.....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔ ..15¢@16¢
2, 3, 4 and 5-Ply Jute, ⅛ ℔ Balls.....10¢
Wool.....6½¢@6½¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

**Vises—**

Solid Box.....50&10@50&10&5%
*Parallel—*
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60@10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%
*Saw Filers—*
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....60⅓&10%
Hopkins'.....₩ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Combination Hand Vises.....₩ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%

**Wagon Boxes**—See Boxes, Wagon.

**Washer Cutters**—See Cutters Washer.

**Wagon Jacks**—See Jacks, Wagon.

**Ware, Hollow, Enameled, &c.**

*Cast Iron, Hollow—*
Stove Hollow-Ware—
Ground.....55&5@60&5%
Unground.....65&10@65&10&5%
White Enameled-Ware—
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Tinned Boilers and Saucepans.....40&5%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
*Enameled—*
Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%
*Kettles—*
Galvanized Tea-Kettles—

| Inch.... | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| Each.... | 55¢ | 60¢ | 65¢ | 75¢ |

*Standard Fiber—*

| | Per Dozen. Plain. | Dec'r'd |
|---|---|---|
| Wash-Basins, 10½ in. | $2.00 | $2.25 |
| Wash-Basins, 12 in. | 2.25 | 2.75 |
| Keelers, 11¼ in. | | 4.00 |
| Cuspidors | | 3.00 |
| Spittoons, "Daisy," 8 in.... | 4.00 | 4.50 |
| Peck Measure | 4.00 | |
| Half-peck Measure | 3.50 | |

See also Pails.
*Indurated Fiber—25%*
Spittoons, No. 2, ₩ doz.....$9.00
Basins, Ringed, ₩ doz., No. 2, $4.80; No. 3.....$4.20
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₩ nest.....$7.50
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest.....$3.70
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest.....$2.25
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₩ set.....$3.00
Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ₩ set.....$3 00
See also *Pails.*
*Silver Plated, Hollow—*
4 mo. or 5 % cash in 30 days.
Reed & Barton } 40&5%
Meriden Britannia Co. } 40&5%
Simpson, Hall, Miller & Co. } 40&5%
Rogers & Brother } 40&5%
Hartford Silver Plate Co } 40&5&5%
William Rogers Mfg. Co } 40&5&5%

**Washers—**

| Size | ¼ | 5-16 | ⅜ | ½ | ⅝ | ¾ | 1 |
|---|---|---|---|---|---|---|---|
| Washers | 6¾ | 5¾ | 4¾ | 3¾ | 3 | 3 | 3 |

In lots less than 200 ₩, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

**Wedges—**

Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 4 ¢

**Weights, Sash—**

Solid Eyes.....₩ ton $18@$19

**Well Buckets, Galvanized**—See Buckets, Well, Galvanized.

**Wheels, Well.**

8 in., $2.25; 10 in., $2.70; 12 in., $3.25

**Wire and Wire Goods—**

*Iron—*
Market,
Br. & Ann., Nos. 0 to 18.....72½%
Cop'd, Nos. 0 to 18.....70%
Galv., Nos. 0 to 18.....62½%
Tin'd, Tinned list Nos. 0 to 18.....62½%
Stone,
Br. and Ann'd, Nos. 16 to 18....72½%
Bright and Ann'd, Nos. 19 to 26.... 75%
Br. and Ann'd, Nos. 27 to 36.....77½%
Tinned.....
Tinned Broom Wire, 18 to 21, ₩ ℔...5½¢
Galvanized Fence, Nos. 8 and 9.....65%
Annealed Fence, Nos. 8 and 9.....75%
Annealed Grane, Nos. 10 to 14.....75%
Brass, list Jan. 18, 1884.....25%
Copper, list Jan. 18, 1884.....25%
Barb Fence.....See Trade Report
Annealed Wire on Spools.....50%
Malin'sSteel and Tin'd on Spools.....50%
Malin's Brass and Cop. on Spools.....40%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, Nos. 12 to 30..55¢ ₩ ℔
Picture Wire.....New list 50%
Wire Clothes Lines, see Lines.

*Bright Wire Goods—*
Standard list.....85%

*Wire Cloth and Netting.*
Painted Screen Cloth, good quality, ₩ 100 sq. ft., $1.60 @ $1.75
Galvanized Wire Netting.....70&10@75%

**Wire Rope**—See Rope, Wire.

**Wrenches—**

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&5%
Coes' "Mechanics".....50&10&5%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'..60&10%
Lamson & Sessions' Standard...70&10%
P. S. & W. Agricultural... } 75@77&10
Girard Agricultural... } 75@77&10
Lamson & Sessions' Agric'l.. } 75@77&10
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....30&10%
Acme, Bright.....60&5%
Acme, Nickeled.....50&5%
Walker's.....55&5%
Diamond Steel.....55&5%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&5%

**Wringers, Clothes—**

List March 11, 1889, 2% cash.

**Wrought Goods—**

Staples, Hooks, &c., list Jan. 12, 1886, 80&15@85%

# PAINTS, OILS AND COLORS.—Wholesale Prices.

### Animal and Vegetable Oils.

| | | | |
|---|---|---|---|
| Linseed, City, raw..per gal. | 62 | @ | 64 |
| Linseed, City, boiled..... | 64 | @ | 66 |
| Linseed, Western, raw..... | 59 | @ | 60 |
| Lard, City, Extra Winter.. | .. | @ | 51 |
| Lard, City, Prime..... | 49 | @ | 50 |
| Lard, City, Extra No. 1..... | 45 | @ | 46 |
| Lard, City, No. 1..... | 42 | @ | 43 |
| Lard, Western, prime..... | 49 | @ | 50 |
| Cotton-seed, Crude, prime, | 32 | @ | .. |
| Cotton-seed, Crude, off grades..... | 27 | @ | 30 |
| Cotton-seed, Summer Yellow, prime..... | 36 | @ | 36½ |
| Cottonseed, Summer Yellow, off grades..... | 31 | @ | 33½ |
| Sperm, Crude..... | .. | @ | 65 |
| Sperm, Natural Spring..... | 67 | @ | 69 |
| Sperm, Bleached Spring.... | 73 | @ | 74 |
| Sperm, Natural Winter..... | 74 | @ | 77 |
| Sperm, Bleached Winter.... | 79 | @ | 82 |
| Whale, Crude..... | .. | @ | 45 |
| Whale, Natural Winter..... | 49 | @ | .. |
| Whale, Bleached Winter... | 51 | @ | 52 |
| Whale, Extra Bleached..... | 54 | @ | 55 |
| Sea Elephant, Bleached Winter..... | 60 | @ | 62 |
| Menhaden, Crude, Sound... | 23 | @ | 24 |
| Menhaden, Crude, Southern | .. | @ | .. |
| Menh den, Light Pressed.. | 26 | @ | 28 |
| Menhaden, Bleached W'ter. | 32 | @ | 33 |
| Menhaden, Extra Bleached | 35 | @ | 36 |
| Tallow, City, prime..... | .. | @ | 45 |
| Tallow, Western, prime.... | .. | @ | .. |
| Cocoanut Ceylon..... | 6½ | @ | 6¾ |
| Cocoanut, Cochin..... | 6½ | @ | 6¾ |
| Cod, Domestic ..... | .. | @ | 32 |
| Cod, Foreign..... | 33 | @ | 34 |
| Red Elaine..... | 31 | @ | 34 |
| Red Saponified..... ₩ ℔ | 4½ | @ | 4½ |
| Bank.....per gal | 25 | @ | .. |
| Straits..... | 27 | @ | .. |
| Olive, Italian, bbls..... | 80 | @ | 82 |
| Neatsfoot, prime..... | 62½ | @ | 75 |
| Palm, prime, Lagos....₩ ℔ | 5¾ | @ | 6¼ |

### Mineral Oils.

| | | | |
|---|---|---|---|
| Black, 29 gravity, 25 @ 30 cold test.....per gal | 8 | @ | 9 |
| Black, 29 gravity, 15 cold test..... | 8½ | @ | 9½ |
| Black, 29 gravity, summer. | .. | @ | 7 |
| Cylinder, light, filtered..... | .. | @ | 7 |
| Cylinder, dark, filtered .... | 14 | @ | 20 |
| Cylinder, dard, st'm refined | 10 | @ | 18 |
| Paraffine, 23½ @ 24 gravity. | 11 | @ | 12 |
| Paraffine, 25 gravity..... | 10 | @ | 11 |
| Paraffine, 28 gravity..... | 8½ | @ | 9 |
| Paraffine, red, 21 @ 22 gr'ty | 14 | @ | 14½ |
| Paraffine, red, 22½@23 gr'ty | 12 | @ | 13 |

### Paints and Colors.

| | | | |
|---|---|---|---|
| Barytes, Prime White..... ₩ ton. | $22.00 | @ | $22.50 |
| Barytes, Amer. refined... | 20.00 | @ | .... |
| Barytes, Amer. No. 1.... | 18.00 | @ | .... |
| Barytes, Amer. No. 2.... | 16.00 | @ | .... |
| Barytes, Amer., off-color. | 13.00 | @ | 15.00 |
| Blue, Celestial..... ₩ ℔ | 5½ | @ | 7½ |
| Blue, Chinese ..... | 45 | @ | 50 |
| Blue, Prussian..... | 20 | @ | 35 |
| Blue, Ultramarine ..... | 7 | @ | 25 |
| Brown, Spanish ..... | ½ | @ | 1 |
| Brown, Vandyke, Amer.. | 3 | @ | 3½ |
| Brown, Vandyke, English | 6 | @ | 8 |
| Black, American Drop.... | 8 | @ | 10 |
| Black, English Drop..... | 12 | @ | 14 |
| Black, Frankfort, Drop.... | 5 | @ | 18 |
| Black, Lamp, common .... | 12 | @ | 18 |
| Black, Lamp, medium.... | 19 | @ | 25 |
| Black, Lamp, prime..... | 27 | @ | 33 |
| Carmine, No. 40, in bulk. | 3.10 | @ | .. |
| Carmine, No. 40, in boxes or barrels ..... | 3.20 | @ | .. |
| Carmine, No. 40, in ounce bottles..... | 4.20 | @ | .. |
| Chalk, in bulk.... ₩ ton. | 2.00 | @ | 2.50 |
| Chalk, in bbls..₩ 100 ℔ | 30 | @ | 35 |
| China Clay, English.... ₩ ton. | 13.50 | @ | 18.00 |
| China Clay, Southern... | 10.00 | @ | 11.50 |
| Cobalt Oxide, prep'd.... | 2.90 | @ | .... |
| Cobalt Oxide, black..... lots 100 ℔. | 2.60 | @ | .... |
| Cobalt, Oxide, black..... less 100 ℔ | 2.65 | @ | .... |
| Crocus Martus, Engl. ₩ ℔. | 1½ | @ | 2½ |
| Crocus, American ..... | 1½ | @ | 2½ |
| Green, Paris, in bulk..... | 14 | @ | 14½ |
| Green, Paris, 170 @ 175 ℔ kegs..... | 14½ | @ | 15 |
| Green, Paris, small pack. | 16 | @ | 21 |
| Green, Chrome, ordinary | 8 | @ | 13 |
| Green, Chrome, pure.... | 22 | @ | 25 |
| Lead, Eng., B.B. white.... | 9 | @ | 10 |
| Lead, Amn. White, dry or in oil: Kegs, lots less than 1000 ℔.. | | @ | 7 |
| Kegs, lots 1000 ℔ to 5 tons.. | | @ | 6¼ |
| Kegs, lots 5 tons to 12 tons.. | | @ | 6¾ |
| Kegs, lots 12 tons and over.. | | @ | 6¼ |
| Lead, White, in oil, 25 ℔ tin pails, add to keg price. .... | | @ | ½ |
| Lead, White, in oil, 12½ ℔ tin pails, add to keg price..... | | @ | 1 |
| Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price. | | @ | 2½ |
| Lead, Red, bbls. and ½ bbls.... | 6 | @ | 6¼ |
| Lead, Red, kegs..... | 6¼ | @ | 7 |
| Litharge, kegs..... | 6¼ | @ | 7 |
| Litharge, bbls. and ½ bbls..... | 6 | @ | 6¼ |

TERMS, &c.—Lead and Litharge.—On lots of 1000 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

| | | | |
|---|---|---|---|
| Ocher, Rochelle..... | 1.35 | @ | 1½ |
| Ocher, French Washed..... | 1½ | @ | 2½ |
| Ocher, German Washed... | 1½ | @ | 3 |
| Ocher, American..... | ½ | @ | 1½ |
| Orange Mineral, English.... | 8½ | @ | 9½ |
| Orange Mineral, French.... | 9 | @ | 9½ |
| Orange Mineral, German .. | 8½ | @ | 9½ |
| Orange Mineral, American.. | 8 | @ | 8½ |
| Paris White, English Cliff-stone..... | 90 | @ | 1.10 |
| Paris White, American..... | 70 | @ | 80 |
| Red, Indian, English..... | 5½ | @ | 7 |
| Red, Indian, American.... | 2 | @ | 6 |
| Red, Turkey..... | 9 | @ | 14 |
| Red, Tuscan ..... | 9 | @ | 11 |
| Red, Venetian, American.. ₩ 100 ℔. | 90 | @ | 1.25 |
| Red, Venetian, English.... | 1.00 | @ | 1.45 |
| Sienna, Italian, Burnt and Powd. ₩ ℔ ..... | 5 | @ | 6½ |
| Sienna, Ital., Burnt Lumps | 1½ | @ | 3½ |
| Sienna, Ital., Raw, Powd.. | 5 | @ | 6½ |
| Sienna, Ital., Raw Lumps.. | 2 | @ | 3½ |
| Sienna, American, Raw.... | 1½ | @ | 1¾ |
| Sienna, American, Burnt and Powdered..... | 1½ | @ | 1¾ |
| Talc, French ..... | 1½ | @ | 1¾ |
| Talc, American..... | 1 | @ | 1¾ |
| Terra Alba, Fr'ch. ₩ 100 ℔ | 72½ | @ | 80 |
| Terra Alba, English ..... | 80 | @ | 85 |
| Terra Alba, American No. 1 | 70 | @ | 75 |
| Terra Alba, American No. 2 | 38 | @ | 40 |
| Umber, Turkey, Bnt. and Powd..... ₩ ℔ | 3½ | @ | 4 |
| Umber, Turkey Bnt. Ln | 2½ | @ | 3 |
| Umber, Turkey, Raw and Powdered..... | 3½ | @ | .. |
| Umber ,Turkey, R'w Lmps | 2½ | @ | 2¾ |
| Umber, Turkey, Bnt. Amer. | 1¾ | @ | 1¾ |
| Umber, Turkey, R'w Amer. | 1½ | @ | 1¾ |
| Yellow, Chrome..... | 10 | @ | 25 |
| Vermilion, Americ. Lead.. | 11½ | @ | 13 |
| Vermilion, Quicks'er, bulk. | 72½ | @ | — |
| Vermilion, Quicks'er, bags. | 73½ | @ | — |
| Vermilion, Quicksilver, smaller pkgs..... | 77½ | @ | .. |
| Vermilion, English Import | 82 | @ | 85 |
| Vermilion, Imitation, Eng. | 8 | @ | 25 |
| Vermilion, Trieste..... | 75 | @ | 77 |
| Vermilion, Chinese..... | 88 | @ | 90 |
| Whiting, Common. ₩ 100 ℔ | 40 | @ | 45 |
| Whiting, Gilders'..... | 50 | @ | 55 |
| Zinc, American, dry... ₩ ℔ | 3½ | @ | 4½ |
| Zinc, French, Red Seal.... | .. | @ | 7½ |
| Zinc, French, Green Seal.. | .. | @ | 7½ |
| Zinc, French, V. M. X..... | 6 | @ | 6½ |
| Zinc, Antwerp, Red Seal... | .. | @ | 6¾ |
| Zinc, Antwerp, Green Seal | .. | @ | 7½ |
| Zinc, German, L. Z. O.... | .. | @ | 6¾ |
| Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over..... | 10¼ | @ | 10¾ |
| lots less than 1 ton ..... | 10½ | @ | 11 |
| Zinc, V. M. in Poppy Oil, Red Seal..... | .. | @ | .. |
| lots of 1 ton and over.... | 9½ | @ | 10 |
| Lots of less than 1 ton.... | 9¾ | @ | 10¼ |

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %, 50 bbls, 4 %. No discount allowed on less than bbl. lots.

### Colors in Oil.

| | | | |
|---|---|---|---|
| Blue, Chinese ..... ₩ ℔ | 35 | @ | 40 |
| Blue, Prussian..... | 29 | @ | 45 |
| Blue, Ultramar.ine..... | 12 | @ | 18 |
| Brown, Vandyke..... | 7 | @ | 12 |
| Green, Chrome..... | 8 | @ | 13 |
| Green, Paris..... | 15 | @ | 18 |
| Sienna, Raw..... | 7 | @ | 13 |
| Sienna, Burnt..... | 7 | @ | 13 |
| Umber Raw..... | 7 | @ | 10 |
| Umber, Burnt ..... | 7 | @ | 10 |

### Glue.

| | | | |
|---|---|---|---|
| Low Grade.....₩ ℔ | 8 | @ | 10 |
| Cabinet..... | 12 | @ | 14 |
| Medium White..... | 13 | @ | 15 |
| Extra White..... | 17 | @ | 20 |
| French..... | 9 | @ | 20 |
| English..... | 10 | @ | 15 |
| Irish..... | 12 | @ | 15 |

# CURRENT METAL PRICES.

## JULY 2, 1890.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

### IRON AND STEEL.

#### Bar Iron from Store.

| | |
|---|---|
| Common Iron : | |
| ⅜ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in. | ₩ lb 2 00 @ 2.10¢ |
| Refined Iron : | |
| ⅜ to 2 in. round and square.. 1 to 4 in. x ⅜ to 1½ in. 4½ to 6 in. x ⅜ to 1 in. | ₩ lb 2.20 @ 2.30¢ |
| 1 to 6 in. x ¼ and 5-16 | ₩ lb 2.40 @ 2.50¢ |
| Rods—⅜ and 11-16 round and sq. | ₩ lb 2.30 @ 2.40¢ |
| Bands—1 to 6 x 3-16 to No. 12 | ₩ lb 2.50 @ 2.60¢ |
| "Burden Best" Iron, base price | ₩ lb 3.00 @ ....¢ |
| Burden's "H. B. & S." Iron, base price | ₩ lb 2 80 @ ....¢ |
| "Ulster" | ₩ lb 3.00 @ ....¢ |
| Norway Bars | 4.00 @ ....¢ |
| Norway Shapes | 5.00 @ ....¢ |

#### Merchant Steel from Store.

| | Per pound. |
|---|---|
| Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots | 2¼¢ |
| Best Cast Steel, base price in small lots | 8 ¢ |
| Best Cast Steel Machinery, base price in small lots | 5¢ |

#### Sheet Iron from Store.

| | Common American. | | R. G. Cleaned. |
|---|---|---|---|
| 10 to 16 | ₩ lb 3.00 @ | 3.00¢ | 3.50 @ ....¢ |
| 17 to 20 | ₩ lb 3.25 @ | 3.25¢ | 3.50 @ 3.75 ¢ |
| 21 to 24 | ₩ lb 3.35 @ | 3.35¢ | 3.75 @ ....¢ |
| 25 and 26 | ₩ lb 3 45 @ | .... | 3.75 @ ....¢ |
| 27 | ₩ lb 3.55 @ | 3.62½¢ | 4.00 @ ....¢ |
| 28 | ₩ lb 3.75 @ | ....¢ | 4.25 @ ....¢ |
| | B. B. | | 2d qual. |
| Galv'd, 14 to 20, | ₩ lb, 5.00 @ | .... | 4.75½ @ ....¢ |
| Galv'd, 21 to 24, | ₩ lb, 5.37½ @ | .... | 5.12½ @ ....¢ |
| Galv'd, 25 to 26, | ₩ lb, 5.75 @ | .... | 5.50 @ ....¢ |
| Galv'd, 27 | ₩ lb, 6.12½ @ | .... | 5.85½ @ ....¢ |
| Galv'd, 28 | ₩ lb, 6.50 @ | .... | 6.23 @ ....¢ |
| Patent Planished | ₩ lb A 10¢ | | B, 9¢ |
| Russia | ₩ lb 9¼¢ @ 10¢ | | |
| American Cold Rolled B. B. | ₩ lb 5¢ @ 7¢ | | |
| Craig Polished Sheet Steel | ₩ lb, 8¼¢ | | |

#### English Steel from Store.

| | |
|---|---|
| Best Cast | ₩ lb 15 ¢ |
| Extra Cast | ₩ lb 16½ @ 17 ¢ |
| Swaged, Cast | ₩ lb 16 ¢ |
| Best Double Shear | ₩ lb 15 ¢ |
| Blister, 1st quality | ₩ lb 13 ¢ |
| German Steel, Best | ₩ lb 10 ¢ |
| 2d quality | ₩ lb 9 ¢ |
| 3d quality | ₩ lb 8 ¢ |
| Sheet Cast Steel, 1st quality | ₩ lb 15 ¢ |
| 2d quality | ₩ lb 14 ¢ |
| 3d quality | ₩ lb 12½¢ |
| R. Mushet's "Special" | ₩ lb 45 ¢ |
| " " "Titanic" | ₩ lb 20 ¢ |

### METALS.

#### Tin.

| | Per lb |
|---|---|
| Banca, Pigs | 22½¢ |
| Straits, Pigs | 22¾¢ |
| Straits in Bars | 25 ¢ |

#### Tin Plates.

| | | | Per box. |
|---|---|---|---|
| | *Charcoal Plates.—Bright.* | | |
| Melyn Grade | IC, 10 x 14 | .... | @ $6.25 |
| " " | IC, 12 x 12 | .... | @ 6.50 |
| " " | IC, 14 x 20 | .... | @ 6.25 |
| " " | IC, 20 x 28 | .... | @ 12.75 |
| " " | IX, 10 x 14 | .... | @ 7.75 |
| " " | IX, 12 x 12 | .... | @ 8.00 |
| " " | IX, 14 x 20 | .... | @ 7.75 |
| " " | IX, 20 x 28 | .... | @ 15.50 |
| " " | DC, 12½ x 17 | .... | @ 5.75 |
| " " | DX, 12½ x 17 | .... | @ 7.25 |
| Calland Grade | IC, 10 x 14 | .... | @ 6.25 |
| " " | IC, 12 x 12 | .... | @ 6.50 |
| " " | IC, 14 x 20 | .... | @ 6.15 |
| " " | IX, 10 x 14 | .... | @ 7.40 |
| " " | IX, 12 x 12 | .... | @ 7.65 |
| " " | IX 14 x 20 | .... | @ 7.40 |
| Allaway Grade | IC, 10 x 14 | .... | @ 5.35 |
| " " | IC, 12 x 12 | .... | @ 5.50 |
| " " | IC, 14 x 20 | .... | @ 5.35 |
| " " | IC, 20 x 28 | .... | @ 10.75 |
| " " | IX, 10 x 14 | .... | @ 6.50 |
| " " | IX, 12 x 12 | .... | @ 6.65 |
| " " | IX, 14 x 20 | .... | @ 6.50 |
| " " | IX, 20 x 28 | .... | @ 13.25 |
| " " | DC, 12½ x 17 | .... | @ 5.00 |
| " " | DX, 12½ x 17 | 6.00 | @ 6.00 |
| | *Coke Plates.—Bright.* | | |
| Steel Coke.—IC, 10 x 14, 14 x 20 | | .... | @ $5.12½ |
| | 10 x 20 | .... | @ 7.25 |
| | 20 x 28 | .... | @ 10.25 |
| | IX, 10 x 14, 14 x 20 | .... | @ 6.00 |
| BV Grade.—IC, 10 x 14, 14 x 20 | | .... | @ 4.87½ |
| | *Charcoal Plates.—Terne.* | | |
| Dean Grade.—IC, 14 x 20 | | .... | @ $5.00 |
| | 20 x 28 | .... | @ 10.00 |
| | IX, 14 x 20 | .... | @ 5.80 |
| | 20 x 28 | .... | @ 11.60 |
| Abecarne Grade.—IC, 14 x 20 | | .... | @ 4.85 |
| | 20 x 28 | .... | @ 9.87 |
| | IX, 14 x 20 | .... | @ 5.80 |
| | 20 x 28 | .... | @ 11.60 |

*Tin Boiler Plates.*

| | | |
|---|---|---|
| I ⅭX, 14 x 26 | 112 sheets | $13.00 @ $13.00 |
| I ⅭX, 14 x 28 | 112 sheets | @ 13.25 |
| I ⅭXX, 14 x 31 | 112 sheets | @ 14.75 |

#### Copper.

DUTY: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem

*Ingot.*

| | |
|---|---|
| Lake | @ 17 ¢ |
| Baltimore Grade | @ 15½¢ |

*Sheet and Bolt.*

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1889, being quotations for all sized lots.

| Not wider than | Not longer than | And longer than | Weights per square foot and prices per pound. Over 64 oz. | 32 to 64 oz. | 16 to 32 oz. | 14 to 16 oz. | 12 to 14 oz. | 10 to 12 oz. | 8 to 10 oz. | Less than 8 oz. |
|---|---|---|---|---|---|---|---|---|---|---|
| 30 | 72 | | 22 | 22 | 22 | 23 | 24 | 25 | 28 | 30 |
| 30 | 72 | | 22 | 22 | 22 | 23 | 25 | 27 | 31 | .... |
| 36 | 96 | | 22 | 22 | 22 | 24 | 26 | 30 | 33 | .... |
| 36 | 96 | | 22 | 22 | 23 | 25 | 27 | 31 | 35 | .... |
| 48 | 96 | | 22 | 22 | 24 | 26 | 28 | 32 | .... | .... |
| 48 | 96 | | 22 | 22 | 25 | 27 | 29 | 33 | .... | .... |
| 60 | 96 | | 22 | 22 | 27 | 29 | 34 | .... | .... | .... |
| 60 | 96 | | 22 | 23 | 28 | 31 | .... | .... | .... | .... |
| 84 | 96 | | 23 | 24 | 29 | 33 | .... | .... | .... | .... |
| 84 | 96 | | 24 | 25 | 30 | 35 | .... | .... | .... | .... |
| Over 84 in. wide | | | 25 | 27 | .... | .... | .... | .... | .... | .... |

| | | | | |
|---|---|---|---|---|
| All Bath Tub Sheets | 16 oz. | 14 oz. | 12 oz. | 10 oz |
| Per pound | $0.25 | 0.27 | 0 29 | 0.32 |

Bolt Copper, ⅜ inch diameter and over, per pound. 22¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 96 inches diameter, 8 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

*Copper Bottoms, Pits and Flats.*

| | Per pound. |
|---|---|
| 14 ounce to square foot and heavier | 26¢ |
| 12 ounce and up to 14 ounce to square foot | 27¢ |
| 10 ounce and up to 12 ounce | 29¢ |

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

*Tinning.*

| | |
|---|---|
| Tinning sheets on one side, 10, 12 and 14 x 48 each | 8¢ |
| Tinning sheets on one side, 30 x 60 each | 30¢ |
| For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each | 15¢ |
| For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each | 12¢ |
| For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each | 12¢ |
| Tinning sheets on one side, other sizes, per square foot | 2½¢ |
| For tinning both sides double the above prices. | |

*Planished Brass and Copper.*

14 x 48.

14 and 16 oz. and heavier..31¢. By the case...30¢ ₩ lb
12 oz. and lighter.....33¢. By the case...32¢ ₩ lb

24 x 48 and 30 x 60.

14 and 16 oz. and heavier..44¢. 12 oz.....37¢ ₩ lb

*Seamless Brass and Copper Tubes.*

| O. G. | N. G. | ⅝ | ½ | ⅜ | ¼ | ⅛ | 1 | 1¼ |
|---|---|---|---|---|---|---|---|---|
| 8-14 | 6-12 | 37 | 33 | 30 | 29 | 28 | 27 | 24 |
| 15 | 13 | 38 | 33 | 31 | 30 | 29 | 28 | 25 |
| 16 | 14 | 39 | 34 | 32 | 31 | 30 | 29 | 25 |
| 17 | 15 | 40 | 35 | 33 | 30 | 31 | 30 | 26 |
| 18 | 16 | 42 | 36 | 34 | 32 | 31 | 30 | 27 |
| 19 | 17 | 43 | 37 | 35 | 34 | 33 | 32 | 29 |
| 20 | 18-19 | 44 | 39 | 37 | 36 | 35 | 34 | 31 |
| 21 | 20 | 46 | 41 | 39 | 38 | 37 | 36 | 34 |
| 22 | 21 | 48 | 42 | 40 | 39 | 38 | 37 | 36 |
| 23 | 22 | 50 | 44 | 42 | 41 | 40 | 39 | 39 |
| 24 | 23 | 53 | 46 | 44 | 43 | 41 | 40 | 41 |
| 25 | 24 | 56 | 49 | 46 | 45 | 44 | 43 | 45 |

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional.

*Brazed Brass Tubing.* (To No. 20, inclusive.

| | |
|---|---|
| Above 5-16 inch to 3 inch, inclusive | 35¢ |
| Plain, above 3 inch | 45¢ |
| Plain, 5-16 inch | 45¢ |
| Plain, ¼ inch | 60¢ |
| Plain, 3-16 inch | $1.00 |
| Plain, ⅛ inch | 1.50 |
| Fancy Tubing, Brass, to No. 20, inclusive | 43¢ ₩ lb |
| bronze Tubing, 3¢ ₩ lb more than Brass. | |
| Discount from list | 25 @ ... % |

#### Roll and Sheet Brass.

Discount from list 25 %

#### High Brass Rods.

| | |
|---|---|
| Over 1 inch diameter | 27¢ |
| ¼ inch to 1 inch diameter, both inclusive | 24¢ |
| No. 8 and less than ¼ inch diameter | 26¢ |
| Smaller than No. 8 | 30¢ |

Hexagon, Octagon and Square, 2¢ ₩ lb advance over Round Rods.

#### Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

| | |
|---|---|
| Western Spelter | 6¼¢ |
| "Bertha" | 8¢ |

#### Zinc.

Duty; Sheet, 2½¢ ₩ lb.

| | |
|---|---|
| 600 lb casks | 6¼¢ |
| Per lb | 7¼¢ |

#### Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 3¢ ₩ lb.

| | |
|---|---|
| American | 4½¢ |
| Bar | 5 ¢ |
| Pipe, subject to trade discount | 6½¢ |
| Tin-Lined Pipe, subject to trade discount | 15¢ |
| Block Tin Pipes, subject to trade discount | 40¢ |
| Sheet, subject to trade discount | 7½¢ |

#### Solder.

| | |
|---|---|
| ½ @ ½ (Guaranteed) | 15 ¢ |
| No. 1 | 12 ¢ |
| Extra Wiping | 11½¢ @ 12 ¢ |

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

#### Antimony.

| | |
|---|---|
| Cookson | ₩ lb 24½¢ |
| Hallett's | " 21½¢ |

#### ALUMINUM.

**Prices in Ingots.**

$2.00 ₩ lb in lots of 1000 lb and over.
$2.25 ₩ lb in lots of 500 lb and over.
$2.50 ₩ lb in lots of 100 lb and over.

**Prices Per Pound on Rolled Sheets.**

*(Brown & Sharpe, Standard Gauge.)*

| Wider than. / And including. | 2 in. 10 in. | 10 in. 14 in. | 14 in. 18 in. | 18 in. 22 in. | 22 in. 24 in. |
|---|---|---|---|---|---|
| Up to No. 20 inclusive | $2.50 | $2.60 | $2.80 | $3.00 | $3.20 |
| Nos. 21, 22, 23 and 24 | 2.60 | 2.70 | 2.90 | 3 10 | 3.30 |
| Nos. 25 and 26 | 2.7· | 2.80 | 3.00 | 3.20 | 3.40 |
| Nos. 27 and 28 | 2.80 | 2.90 | 3.10 | 3.30 | 3.50 |

Sheets, thinner than No. 28 gauge and wider than 24 inches, special prices not less than $5 per pound.
Add 35 cents per pound for sheets cut to particular widths and lengths.
Sheets rolled to .001 in. and under, 50 cents per ounce.
Leaf in books, 20 cents per book; $2 per pack of 10 books, sheets 5 x 5 inches.

#### Aluminum Tubing.

From $4 per pound upward, according to size and thickness of walls.

#### Aluminum Castings.

From 50 cents upwards per pound extra over the cost of the metal in ingots, according to the number wanted, weight, the difficulty of casting, cost of patterns, &c.

#### Aluminum Wire in Coils.

*(Brown & Sharpe, Standard Gauge.)*

| | Per lb |
|---|---|
| All numbers up to No. 14 (.064 in.) inclusive | $3.00 |
| Nos. 15 (.05706 in.) to 22 (.0x534 in.) inclusive | 3.25 |
| Nos. 23 (.02571 in.) and 24 (.0201 in.) inclusive | 3.50 |
| Nos. 25 (.0179 in.) and 26 (.01594 in.) inclusive | 3.75 |
| Nos. 27 (.014195 in.) and 28 (.012641 in.) inclusive | 4.00 |
| Nos. 29 (.011257 in.) and 30 (.010023 in.) inclusive | 4.25 |
| No. 31 (.008928 in.) | 4.50 |
| No. 32 (.00795 in.) | 4.75 |
| No. 33 (.00708 in.) | 5.00 |
| No. 34 (.00630 in.) | 5.25 |
| No. 35 (.00561 in.) | 5.75 |
| No. 36 (.00500 in.) | 6.25 |
| No. 37 (.00445 in.) | 7.00 |
| No. 38 (.003965 in.) | 8.50 |
| No. 39 (.003531 in.) | 12.00 |
| No. 40 (.003144 in.) | 16.00 |

Spooling, on 1-pound spools, 15 cents per pound extra
Spooling, on 10-pound spools, 5 cents per pound extra